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LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

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LECTURE XXIV.

ON THE OSTEOLOGY OF THE MONOTREMATOUS AND EDENTULOUS QUADRUPEDS.

SOME are interested only in gigantic forms,—huge whales, like icebergs, that plough the ocean for a thousand years; lofty giraffes that prune the foliage twenty feet above the ground; or the ponderous carcases of elephants, rhinoceroses, and hippopotami. The geologist is lost in admiration of the enormous bones of mammoths and mastodons and megatheria, as the majestic remains of a past and grander era of the earth's history, when the polar regions, now bound up in thick-ribbed ice, enjoyed the climate and vegetation of the tropics. The bones of the horse and the ass, and of domestic cattle, are all-important to the horseman, and the farrier, and those of congenial taste. Most have a lively interest in structures which present an obvious and fine adjustment to some marked and well-known peculiarity in the living habits of the species. The human anatomist and physiologist derives his illustrations chiefly from those intelligible structures which approach nearest to the human type. Some eagerly look into complex structures, with the hope of discovering anomalous parts, or peculiar formations, to mystify the study, while the philosophy of anatomy is chiefly occupied in reducing apparent exceptions to the general laws of development, and in demonstrating a unity of plan throughout all the grades of animal organization.

Great interest was attached at an early period to the study of the *monotrematous* animals, from a notion that they presented something altogether anomalous and peculiar in their structure, not according with the characters assigned by zoologists to their principal subdivisions of the animal kingdom. At length, however, it was imagined, that as there are birds and reptiles, ostriches and crocodiles, which present striking approximations to the mammalia, there might be mammalia which present affinities to inferior classes; and these approximations to birds and reptiles were found in the peculiarities of the ornithorhyncus and echidna. With a divided uterus like oviparous animals, it was imagined that these edentulous genera of New Holland must lay eggs like a bird or a reptile, till it was observed, that as we descend through the inferior mammalia, as the ruminantia, the uterus becomes more and more completely divided, and at length, in the lower rodentia, as in the rabbit, it is cleft throughout its whole extent, as in the *monotrema* and *marsupialia*, without entirely altering their viviparous mode of generation. And from having no nipples, it was supposed that the *monotrema* had no mammary glands, till the investigations of MECKEL and GEOFFROY SAINT-HILAIRE demonstrated the existence and the structure and all the relations of these organs, and several observers in New Holland showed that they secreted milk. The divided form of the uterus seen in the monotrema and other inferior mammalia, and which extends through a part of the vagina in the marsupialia, is the common form presented by this organ in our species, and the rest of the class, at an early period of their development, and it sometimes retains this embryo form, as a monstrosity, in the adult state. Most monstrosities consist of such retarded developments.

This order, monotrema, is one which comprehends only two genera of quadrupeds, which are remarkable for their inferiority of development, their smallness, their rarity, and from their being confined to one isolated and remote part on the surface of this globe, New Holland and Van Diemen's Land. The ornithorhyncus and the echidna compose alone this little order *monotrema*, which has received this name from their having but a single passage for the rectal and the vaginal orifices.

In the skeletons of those animals, as in their generative system, we observe many characters which indicate affinities with lower tribes of vertebrata. One of those two forms of the monotrema, the *ornithorhyncus* (*Fig.* 95), belongs to an aquatic animal, inhabiting chiefly the banks of rivers, and swimming about for its food and for safety in the water. In the other form, the *echidna* (*Fig.* 96), we observe the skeleton of a land animal feeding upon the same kind of food with the aquatic species, consisting chiefly of insects, but obtaining that food in a very different situation. The echidna possesses, therefore, more numerous affinities with the other edentulous land quadrupeds. The ornithorhyncus possesses affinities with the same order, and some external affinities with aquatic birds.

In the ornithorhyncus (*Fig.* 95), the parietes of the skull have a thin, smooth, and diaphonous appearance, and the whole head has the lengthened, depressed, and flattened form which we observe in ducks and in many aquatic birds for cutting the water and seizing their prey. This lengthened and extended form of the head is produced partly by the longitudinal extension of the tapering cranial cavity, and by the extension and divergence of the bones of the face. The sutures, as in birds, early disappear all over the cranium and the face. The intermaxillary bones (*Fig* 95, *a*) in the ornithorhyncus are of great size and

Fig. 95

length, diverge to a considerable extent, and present an incurvated, hook-like, free termination. This broad expanded form they have to give support to the upper flat horny bill, formed so much like that of a duck, or mallard, with serrated or denticulated margins. There are no teeth excepting in the back part of the upper and lower jaws; and those teeth consist of shallow thin crowns of a horny texture, without fangs and without ossific matter. There are two of those rudimentary teeth on each side of the upper, and two on each side of the lower jaw, which are sufficiently strong and dense to bruise the soft worms and larvæ found on the muddy banks of rivers.

Thus we observe, that the whole form and the rapid anchylosis of the bones of the head correspond in the ornithorhyncus with the solid parts of the head of birds, and that this lengthened form depends upon the development of those bones upon which the lengthened form of the head in birds depends. The intermaxillary bones, the upper jaw-bones, and the palatine bones, which we see here anchylosed together in the ornithorhyncus, have there great development forwards and laterally for the support of the broad, soft, serrated, horny bill. As in birds, there are true teeth neither in the upper nor in the lower jaw, of a solid earthy nature; and, their bruising instruments, of a horny texture, which imitate the crowns of the teeth of quadrupeds placed upon the back part of the jaws, have not the characters which belong to ordinary teeth, either in their chemical composition, or in their form; for they consist solely of thin flat crowns of a horny texture, like the dental system of the *balænæ*, and of birds, and all the chelonian reptiles. The whole margins of the jaws, being here deeply and regularly serrated, serve as organs of prehension, as we saw in many web-footed swimming birds.

The eyes and the orbits are small, both in the echidna (*Fig.* 96) and in the ornithorhyncus (*Fig.* 95).

Fig. 96

thorhyncus. The orbits and the temporal fossæ in both are united; no circle of bone even encompasses the edge of the orbit in either animal. In place of the transverse osseous septum, which we see in carnivorous quadrupeds separating the hemispheres of the brain from the cerebellum, an ossified tentorium, we find in the ornithorhyncus that there is a longitudinal plate descending along the interior of the skull, like an ossified falx of the dura mater extending between the hemispheres of the brain. The temporal fossa is large in ornithorhyncus, but very small in echidna, where there are no teeth of any kind in either jaw. There are in both animals two long tapering passages, as in birds, for the olfactory nerves, and the cribriform plate of the ethmoid bone is of remarkable extent in the echidna, as also the turbinated portion of that bone, showing its extensive and acute organ of smell, for the perception of its food concealed under ground. The longitudinal ossified falx cerebri is not developed in echidna, which has the skull much more thin, smooth, and diaphonous, than in ornithorhyncus. In both animals the occipital foramen is prolonged upwards upon the back part of the head by a narrow arched continuation. This foramen is of great size, and both have a very extensive double condyle of the occipital bone, not a single condyle as in birds. The lower jaw in both animals has extensive mobility, with the condyle and its glenoid cavity directed longitudinally. The two sides of the lower jaw in ornithorhyncus unite, for strength, by their base, but diverge from each other at the symphysis, for the support of the broad lower horny bill. The face of the ornithorhyncus, notwithstanding its black colour, like horn, possesses great softness and sensibility, and is largely supplied by the second and third branches of the fifth pair of nerves, and the tongue of this animal is short and fleshy. At the period of lactation, the face of the ornithorhyncus is short, broad, soft, and fleshy, with the lips pliant, as in other mammalia.

The neck in both animals is thick, short, and strong, and remarkable for the magnitude of the atlas andthe axis (*Fig.* 95, *d e*), especially the laminæ and the spinous process of the axis. The neck here consists of the same number of vertebræ as in the giraffe, the mouse, and other mammalia—seven. We observe that the processes of the first two cervical vertebræ are largely developed, to give attachment to those straight and oblique muscles that are attached to the back part of the head. The vertebral column on the back part of the body has its spinous processes but small, there being little weight to support on the head. There is considerable mobility allowed in the back part of the column, laterally in ornithorhyncus, and anteriorly in echidna.

The most remarkable character in the skeleton is, probably, that which we observe on the anterior part of the trunk, both in the echidna and in the ornithorhyncus. The clavicles (*Fig.* 97, *h*) descending from the scapula upon each side, meet and extend on the median plane, like those of a bird, and are firmly anchylosed to each other, and united to the sternum (*Fig.* 97, *g g h*). The scapula, which is greatly developed in the echidna in its posterior part, so far resembles that of the ordinary digging quadrupeds; but the scapula of both those monotrematous animals, like the scapula of the bird, reaches down to the sternum, after forming the glenoid cavity (*Fig.* 97, *d e*), and takes a firm attachment on each side to that bone. That is a character which we have seen common in birds, and most oviparous vertebrata. The ribs passing downwards, slender in ornithorhyncus, and strong in echidna as in ant-eaters, reach the sternal appendices (*Fig.* 95, *v v*), where we observe an articulation, and they continue ossified from that joint to the sides of the sternum. That is a character which we have seen necessary in the skeleton of birds; but it is not peculiar to the monotrematous animals among the mammalia, for we see it in other edentulous animals; we see it among the cetacea.

Fig. 97

The peculiar characters which I have just mentioned to you in the skeletons of these small animals, as common to them with birds, indicate affinities not merely with that class, but generally with inferior groups of vertebrata. The analogy ought naturally to be strongest and most obvious with the next lower stage of vertebrata—that of birds—because they are above reptiles, and amphibia, and fishes. But those traits which we look upon here, and are apt to consider as affinities, solely with the inhabitants of the air, are rather to be viewed as marks of inferiority generally, than as any special affinities with the feathered tribes.

Projecting forwards from the anterior part of the pubic bones, you observe, small in the ornithorhyncus, and very large in the echidna, two slightly-curved pyramidal or triangular bones; those are the supplementary, pubic, or marsupial bones (*Fig.* 95, 1), which we see so constant in this position in the marsupial animals. Those bones we have already seen in

crocodiles and anchylosed in tortoises, and they thus mark an inferiority in the general character of the skeleton of the monotrema and marsupialia. The posterior extremities are more developed in ornithorhyncus, and more useful to the animal in its progression through the water, than the anterior, and they are more directed backwards, as in seals and other aquatic mammalia. We saw before, that in the amphibious animals also, which, like the ornithorhyncus, are organised to pass a considerable part of their life in the water, those which in their adult state lose the branchiæ, as the frogs and toads, have the posterior extremities largely developed, compared with the anterior. The bones of the extremities are strong, short, and, for the most part, compressed and expanded in the echidna. They are formed in this animal, on the anterior part of the body, somewhat like those of the mole, with a short compressed humerus, dilated above and below, where the origins and insertions of the digging muscles principally have place.

The hands are much more lengthened and slender in the ornithorhyncus than in the echidna, for the ornithorhyncus and the echidna have very different employments for those organs. The ornithorhyncus being an aquatic animal, requires to have the phalanges of the feet much lengthened, to provide a long, broad, webbed surface for striking the water with effect in swimming; but the echidna is a land animal which scrapes the ground and feeds upon very small insects, in fact, nearly the same kind of food which the ornithorhyncus feeds upon; and it requires, therefore, to have those extremities short and strong, and provided with large claws to dig the ground like most ant-eaters, and like moles and hedge-hogs. There are five toes on all the feet in both animals, and the difference of their living habits is, as usual, most marked by the differences in these members. The humerus of the echidna at its distal extremity is as broad as it is long, expanding outwards on both sides of its condyles. The ulna and the fibula are remarkable in both these animals for their great extensions upwards beyond their accompanying radius and tibia at their proximal extremities.

We observe an analogy to birds in the rapid ossification and anchylosis of the bones of the skull, and in this head of an adult ornithorhyncus, every suture has disappeared, from the occipital foramen to the points of the intermaxillary bones. You will observe also in this skeleton of the *echidna setosa*, that the iliac bones, as in birds, are completely anchylosed o the sides of the sacrum. In birds the dorsal region of the trunk is chiefly shielded in bone by the expanded form of their ribs, and the sternal ribs are narrow and admit of free motion; but in the monotrema the anterior part of the trunk is chiefly shielded by the remarkable expansion of the sternal ribs (*Fig.* 95, r r), which present an imbricated arrangement, those behind lying over the exterior of those before, the sternum being here but limited in its extent, though with its anterior elements largely developed. The marsupial bones met with here, as in the quadrupeds of every character in Australasia, mark the general inferior grade of animal development in that isolated portion of the globe.

The inferiority seen in the skeleton of the monotrema, is accompanied by many well-known peculiarities of their internal soft parts, which also connect them with inferior grades of vertebrata. The divided uterus, as in marsupialia, where the vagina also is partly bifurcated, appears here like the oviducts of birds, incapable of affording a placental means of development to the embryo. And their mammary glands, as you observe by the plates of these organs dissected, given both by Meckel and by Geoffroy St.-Hilaire, have the simple structure and form of aggregated cæca, common in the lowest order of mammalia, and they open by pores, as shown by Geoffroy St.-Hilaire, not by nipples, as in higher mammalia. In the situation and structure of the testes and organ of intromission, we also observe an analogy with the lower classes of vertebrata, and, as in birds, the female organs are imperfectly developed on the right side of the body, with the ovaries formed like those of the feathered tribe. Although these monotrematous quadrupeds present some analogies and points of resemblance to the *edentata*, the low condition of their generative system conveniently separates them as a distinct order, and they are placed by Temminck below the cetacea; by Geoffroy St.-Hilaire they are made a separate class between mammalia and birds, and Lesson has made the ornithorhyncus an anomalous order of birds.

The skeleton of the true *edentulous* quadrupeds presents few characters common to the whole order. The term *edentata*, applied to the animals, however, of this order, refers to a character taken from the hard parts—the want of teeth in the fore part of the mouth; and it is a character which applies to all without exception,—to the existing and to the extinct species. From the gigantic megatherium to the small armadillo, we find those animals to be destitute of teeth along the fore part of the upper and lower jaws; but their living

habits and their kind of food differ so much in the different genera, that we might expect to find the general details of their skeleton in other respects to differ much. The deficiency of teeth in the fore part of the mouth, and sometimes in the whole of the jaws, is accompanied by common characters in other parts of the skeleton, which indicate an inferiority in the type of these animals. The skeletons belonging to this extensive and interesting group, are those of the different kinds of ant-eaters and pangolins, which occupy the lowest place by their complete edentulous character, those singular loricated digging quadrupeds, the little active armadillos of America, and the recent and extinct sloths of the same continent. From the subdivided nature of the animal food of most of these species, they require little development of teeth, and their exterior scaly covering protects them against the myriads of their insect foes, and the dust of their incessant digging. The existing edentata are small animals, which present few common characters of the skeleton, but such as mark the general inferiority of this group of mammalia.

We find in many of these animals, as the sloths and armadillos, that the pubic bones extend far backwards, and taper like those of birds, and they only meet by a small point of contact at the symphysis. In some, as the great-maned ant-eater and the armadillos of America, the ribs expand so much forwards and backwards, as almost to shield the trunk in solid bone, as we saw to be a common character in the class of birds, and still more in the chelonian reptiles.

The sacro-ischiatic notch which we saw converted into a foramen in birds, we find in most of these edentulous quadrupeds to be again, as in birds, converted into a complete foramen. None of the animals belonging to this group possess incisor teeth but one species of armadillo, and that armadillo, the *dasypus sex-cinctus*, possesses only two superior incisor teeth, one in the back part of each intermaxillary bone. Below that single incisor on each side of the mouth,—for, as I have mentioned to you, none, recent or fossil, have teeth in the front part of the mouth,—we observe in the lower jaw two incisors. Therefore that species has four incisors below and two above. The other edentulous quadrupeds are destitute of incisor teeth both above and below, which would be inconvenient in such insect-catchers; most of them are destitute of canine teeth, and some, as the ant-eaters, are destitute of teeth of every kind.

The lengthened form of the head in the armadillos, corresponds with the lengthened form of this part which we see in ant-eaters, in monotrematous animals, and in birds. Those animals, from scraping the ground and burrowing, both for obtaining their food and protection, and for rearing their young, are observed to have all the bones of the extremities, especially of the hands and feet, large and powerful, and the processes which mark the insertion of the muscles prominent and strong. They have considerable mobility in the trunk, and have great activity in their living habits, although they are covered externally with thick horny scales, resembling somewhat those of inferior tribes—those common in the cold-blooded reptiles. The lumbar vertebræ occupy a considerable part of the vertebral column, and allow of considerable extent of motion. There is considerable freedom of motion in their long neck, and great force in the motions of the head, with which they push up the loose earth. The head is very small at the muzzle, the nasal bones very long, the intermaxillaries remarkably small and short, the frontal bones of unusual magnitude and length; the parietals form but a narrow band between the long frontals and the perpendicular occipital bone. The orbits are continuous with the temporal fossæ; the lachrymal bone extends down over the face and contributes to lengthen it; the malar bone forms a long narrow arch, bounding the inferior margin of the orbit. From the length and feebleness of the jaws, the temporal fossæ are small but complete, and the surface of the cranium is rounded and smooth in all the species of these armadillos.

The neck is lengthened and strong, and presents the singular character of having the axis, and two or three of the succeeding vertebræ, anchylosed together from an early period. The spinous processes of these anchylosed cervical vertebræ form an elevated continuous crest of bone, and the spinous processes of all the dorsal and lumbar vertebræ are remarkable for their length and strength. The ribs are so broad as almost to meet each other. The pelvis is remarkable for the lengthened form of the iliac bones, anchylosed to the sacrum, and their longitudinal direction. The pubic bones meet by a very narrow symphysis. The scapulæ are of great size, as in other digging quadrupeds. The clavicles, which are present in the edentata, as in the monotrema, are here long and strong, passing from the long acromion of the scapula to the side of the broad anterior element of the sternum. The radius and ulna are fixed in a state of pronation, and the fibula is anchylosed to the tibia. The olecranon

of the ulna is enormous, as in other scraping animals, and the calcaneum projects backwards to a great extent. The feet are remarkable in these species for the unequal development of the toes, and the magnitude of the ungual phalanges and the claws. These ungual phalanges are not cleft at their points, as in the *manis*, but are generally formed into sheaths at their base, as in the myrmecophaga, the *bradypus*, the *megatherium*, and many of the large *carnivora*. So that they have powerful instruments, which they use with great agility and force,—instruments with which they dig up and pursue the insects and the worms, or uncover the roots in the ground. You will observe, upon looking at the manner in which the large bands of scales are disposed over the back of these animals, that although they are shielded by transverse layers of solid scales, the scales are imbricated, or fall over each other, so that they do not impede the motions of the part of the trunk they cover. It appears to be an advantage to these animals to have their exterior surface covered in that manner with a substance which is not calculated to collect or retain any quantity of the earthy matter they are constantly digging. But, feeding upon insects which have their means of defence generally in the form of stings, we find it is also an appropriate provision for that kind of living food. Here, in the *manis*, there are scales thrown over the exterior of the body, which would defy the buzzings and darts of a thousand wasps. It might pursue its avocations without fear of stings perforating through its texture. Thus we can see that this external dense scaly remnant of an inferior scaly tribe of vertebrata, which has got thus high in the class mammalia, is here preserved for the wisest of purposes, and is, in many ways, useful to these animals, and to those of similar living habits. The megatherium itself appears to have been such a digging loricated animal, and in many of its bones resembles the armadillos.

This large ant-eater of the Cape of Good Hope, or the *orycteropus capensis*, notwithstanding its bulk, feeds only on insects, and has neither incisors nor canine teeth in its long narrow jaws. The flat crowns of its molar teeth, which are formed as if by the junction longitudinally of two round tubular teeth, are studded around their margin with the projecting ends of numerous very minute parallel perpendicular tubes of enamel, which preserve the necessary roughness of the crown of the tooth, for the kinds of insects it feeds on in the sandy wastes of Africa. It has more affinities with ordinary mammalia than most of the edentata, the cervical and lumbar regions of its skeleton are lengthened and flexible, the ribs narrow and slender, the symphysis of the pubis broad, and the sacro-sciatic notch is open; the fibula and the ulna are developed throughout, and free, with the olecranon of moderate length. Though not provided with scales, nor with a brush upon its tail, the coccygeal vertebræ are extended to a great length, and have their superior and inferior spinous processes, and their transverse process, of great length.

To support this great carcass of the Cape hog, as it is commonly called, immense numbers of those minute insects on which it feeds must be required. This *orycteropus* has the extremities much shorter, thicker, and stronger than they are in the ant-eater of America. It scrapes, and burrows, and digs, the soft and loose soil in the southern parts of Africa, and is therefore provided with those large and powerful claws, like hoofs, which are rapidly worn down in that employment. With a lengthened round muzzle and lengthened jaws, it has, like the ant-eaters of America, a slender lengthened, filiform tongue, which it employs in the same manner, to collect and seize large quantities of small insects. The bones of its arms and hands are much larger and stronger than in the American ant-eater. We would infer from that circumstance that the moving hills of loose exposed ants are the chief food of the American species, while the Cape ant-eater, however, requires to dig the soil for the food which it has to obtain. The proportion of all the bones of its head, neck, and extremities, are much stronger. It is probable also that the kind of insects on which it feeds are of a larger and denser character, for it has seven molar teeth on each side of the upper jaw, and six on each side of the lower jaw. So that those peculiarities of the skeleton are accompanied by corresponding peculiarities in the muscular and other soft parts, and in the whole living habits.

In the skeletons of the scaly *manis*, the pangolins of Africa and the East, we observe no teeth whatever, either in their deep upper jaw-bones or in their thin slender lower-jaws. Their nasal and frontal bones are of great length and breadth, the orbits are continuous with the small temporal fossæ, and the zygomatic arch is deficient in its middle. The whole vertebral column is here strong in all its proportions, and the cervical and lumbar regions are long and flexible. The scapula and the ribs are broad and massive in their forms, as are all the bones of their extremities, especially of the hands and feet.

The terminal or ungual phalanges are deeply cleft, so as to give support and strength to the large digging claws.

The great ant-eater of America, the *myrmecophaga jubata* (*Fig.* 98), has almost the

Fig. 98.

head of a bird on the trunk of a quadruped. The jaw-bones, both above and below, have a lengthened, slender, curved form, and are totally destitute of teeth. We might, upon looking at such a structure as we here see in the great-maned ant-eater of the new continent, imagine that this was a defect in the organization of the animal, that it might have been able to bruise and masticate its food better if it had been provided even with the horny stumps which we see in the jaws of the horny-billed ornithorhyncus. When we look better, however, into this matter, what at first appeared a defect becomes a beauty and a wonderful adaptation to its living habits. Large, and beautiful in its fleece, as this quadruped is, it feeds upon ants and the smallest insects. It is the antagonist which nature has provided for those pests of tropical climates, the moving hills of ants. The food of this quadruped is, consequently, already divided, by its nature, into parts sufficiently minute to be digested and acted upon easily by the coats of the stomach, and by the fluids brought into that cavity. It requires no further subdivision, being already composed of extremely minute parts, and of a soft consistence. The tongue has a lengthened, slender, cylindrical, tapering form, corresponding with the lengthened and feeble form of the muzzle, and it can be thrust to a considerable distance, like a long convoluted worm, from the mouth, covered with a copious secretion to which the ants adhere. It is quickly withdrawn into the mouth when covered with ants; the animal seizes the ants, swallows them, and the instrument is thrust forth again, ready for a fresh supply. But supposing that these animals had the instruments of mastication. When animals possess an instrument, whether an instinct originates thereby or accompanies it, we see that that instrument is exerted and employed. Had this animal, then, teeth, or masticating organs, and if it employed its time, and its long jaws, and its large bulk, to munch and munch at a few small ants, seized by its filiform tongue, when surrounded by moving hosts and hills of those animals, following their irresistible course, how could its great bulk be supported? Its insect food is not, like the verdure of the plains, eternally before it; it has often to wait for a considerable time,—often to use powerful exertions to get it; and then when it is present, all the insects anxiously making their escape, it is busily engaged, not in masticating what is already reduced to soft particles, but in collecting together and in swallowing the myriads of those minute animals that surround it. It is, therefore, a wise provision to deprive it of those instruments, which would be not only useless but most injurious to it, for if it had them with the instincts which would necessarily accompany their possession, it would be occupied in munching with its long bird-like jaws at a few small ants, while the mass of food for the support of its great carcass, would have moved on, dispersed, and disappeared.

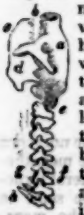
Its lower jaw, slender and toothless as that of an echidna, is bent downwards to its food, and has its ramus short, without coronoid process, as there is no zygomatic arch, and tapering upwards and backwards to terminate in its articular condyle. Its intermaxillaries (*Fig.* 98, *a*) are remarkably minute and short bones, and the long muzzle is formed chiefly by the prolonged nasal and slender upper jaw-bones. The lachrymal and malar bones are peculiarly small, and there is a great vacant space between the malar bone and the large, short, zygomatic process of the temporal. The anchylosed frontals extend about half the length of the head, and the anchylosed parietals form but a narrow band behind them. The palatine bones below are not much shorter than the frontals. The seven free cervical vertebræ form a long and flexible neck, and strong by the development of all their processes. The spinous processes indeed of all the vertebræ are here large and strong, from the long-crested *axis* to the middle of the lengthened tail, and the transverse and the inferior spinous processes of the tail are as large as the superior. The tail in the living animal is covered with long flowing hair, so that although this beautiful animal is not shielded in a coat of mail like most of its order, it has here a parachute to shade it from the scorching sun, or to fan its heated body, a brush to sweep the dust away, and a cat-o-nine-tails to whip the buzzing myriads from around it.

Its broad and strong ribs extend almost to the pelvis, and nearly touch each other, so as to shield its trunk in bone, like that of a bird or a tortoise. Its scapula, of great size, and as broad as long, shows

the power of the muscles which move the head of the humerus, and it has a long bird-like sacrum and pelvis. The bones of the extremities combine lightness with strength, being comparatively slender, but with strong processes for muscular attachments. It has the same unequal development of the fingers which we see in the *megatherium*, and in several existing *edentata*, and its ungual phalanges, both of the hands and feet, have the same sheaths at their base, for the protection and growth of the claws, which we observe in the *megatherium*, in the *sloths*, and in many other long-clawed animals. The bones of its middle finger have more than double the size and strength of any of the other fingers, and appear quite disproportioned to the rest of the hand, but the toes and phalanges are more symmetrical on the hind feet.

Those singular animals, the sloths, are edentulous quadrupeds, and all the recent and extinct sloths are animals of the American continent. The sloths of the present race, the two-toed and the three-toed, the *bradypus* and the *acheus*, are inhabitants only of that country. These animals are remarkable chiefly for what relates to their skeleton and their digestive and sanguiferous systems. The skeleton before you is that of the three-toed sloth, the *bradypus tridactylus*, or *acheus ai* of Fr. Cuv. All the proportions of the skeleton differ remarkably from what we have seen in most of the edentata and most other quadrupeds. There is here (*Fig.* 99) a small, round, truncated head, placed at the extremity of a long, flexible, and feeble neck, the neck composed of nine moveable vertebræ, the two last of which have short false ribs (*Fig.* 99, *g h*), which do not impede their motion. The anterior extremities are of great and disproportionate length, both as compared with the general magnitude of the body and with the shortness of the posterior extremities. There are no incisor or canine teeth in the fore part of the mouth; no teeth in either species are placed in the intermaxillary bones, nor in the gigantic megatherium. The molar teeth, which are placed in the upper and lower jaws of this *ai*, as it is commonly called, from its pitiful cry, are remarkable for their cylindrical and tubular form. They present an exterior circle of enamel on their uneven crown, which encloses a softer osseous substance, and which, from being more rapidly worn down, presents the appearance of a concave cup at the extremity of the crowns of their molar teeth.

Fig. 99.



There are four canine teeth in the two-toed *bradypus*. The muzzle in the *ai* appears more suddenly truncated than in the two-toed species. We observe in both species the malar bone, instead of completing a zygomatic arch, sending down a lengthened, broad, and strong process (*Fig.* 99, *a* to *d*), extending almost to the level of the base of the lower jaw. This character, which marks the insertion and the direction of numerous fibres of the masseter and zygomatic muscles, passing backwards and forwards, is seen also still stronger in the gigantic skulls of the megatherium.

The cervical vertebræ (*Fig.* 99, *e f*) are seven in number as in other quadrupeds, and have great mobility, from the shortness of their spinous and transverse processes, but the two succeeding vertebræ (*Fig.* 99, *g h*) have short false ribs developed from the ends of their very short transverse processes. These very short false ribs on the eighth and ninth vertebræ do not interfere with the freedom of motion which these climbing animals have in this part of the vertebral column, and they show an inferiority in the type of their structure, for the possession of these short false ribs anterior to the true fixed vertebro-sternal ribs, is the common character of birds and reptiles, and not of mammalia, to which the sloths belong. The two-toed bradypus has only one pair of false ribs behind its seven cervical vertebræ, so that it forms a transition from the *ai* to the ordinary forms of mammalia. Living upon trees, and feeding on the buds and the leaves, this lengthened form and freedom of the neck correspond with the great length of its prehensile arms and hands, and must be advantageous to a slow-moving quadruped, where the great arterial trunks going to all the extremities are minutely subdivided at their very commencement, to retard the circulation in those members, and to give the animal the permanent grasp of a reptile's arm.

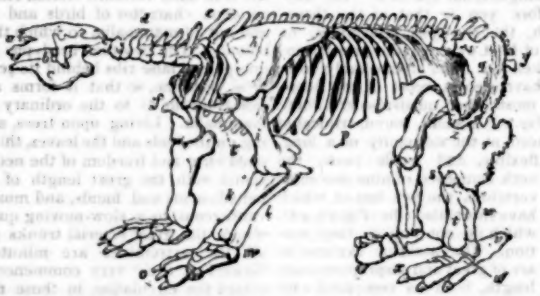
The long oblique pelvis has the iliac bones expanded outwards for the strong extensors of the femur, and they are anchylosed to the sacrum. The pubic bones taper backwards like a bird's, and meet only at a point, and the sacro-sciatic notch is here again a complete foramen, as in the feathered tribes. Its strong ribs enclose but a limited portion of the trunk, from its semi-erect position while climbing, requiring less support for the abdomen. The processes of all the vertebræ are here short, especially the spinous, from the lightness of the small head. With its long prehensile arms, its short round head, its slow reptile movements, and its

pitiful cries on the trees, it caricatures its companions the nimble sportive quadrumana, as these caricature our species. Selecting not the more dainty fruits of the trees, but the coarser shoots and leaves, the sloths, like the *semnopitheci*, have a complex subdivided stomach and lengthened intestine.

The slow motion of all the bones of the extremities, is partly indicated by the anchylosis of some of the bones of the wrist and ankle. At the proximal extremity of the metacarpal and metatarsal bones the whole three appear to be early united and anchylosed, so that no degree of motion between them is admitted in that region. The extremities of all the phalanges present very secure pulley-like articulations, by which the phalanges move with great safety upon each other, but with a very limited direction or variety of motion,—more limited and secure than in most other quadrupeds. It is perhaps the best arrangement for holding with security, and for a length of time, the one branch upon which the animal is seen occasionally to fix its grasp for a sufficient time to obtain all the food within its reach.

So disproportioned is the length of the anterior extremities compared with the posterior, that when placed upon all-fours in a horizontal position of the trunk, the long slender humerus reaches the ground, and the animal, if placed in this position upon the ground, would move, horizontally, upon its elbows, and hind feet; but upon the trees, its natural abode, these long feeble anterior extremities show for what kind of climbing movements they are organised. The radius and ulna, like the tibia and fibula, are lengthened and slender bones, developed throughout their whole extent, and admitting of motion on each other, as in most climbing prehensile members. Beyond the anchylosed, metacarpal, and metatarsal bones, there are but two long slender phalanges on each finger and toe, and the terminal phalanges on both hands and feet have their base dilated, and in form of a short sheath for the base of the long slightly-bent claws. The *bradypus*, or two-fingered sloth, has four toes on the hind feet. The apex, in all these ungual phalanges of the sloths, is entire, and tapered to a narrow point, not cleft, as in some long-clawed animals.

Fig. 100



The bones of the *megatherium* (*Fig.* 100) and of the *megalonyx*, whose gigantic and anomalous remains have been found in the older alluvial formations in different parts of America, agree in so many parts with those of the existing sloths of that country, that they are generally considered to have belonged to the same group of edentulous quadrupeds, and to have been very closely allied in their characters to these few diminutive existing species. A pretty entire skeleton of the megatherium is preserved in the museum of Madrid, and numerous detached bones of the same animal, belonging to the most interesting parts of the skeleton, have lately been brought to London from the same part of America.

Few remains of the megalonyx have yet been found; they occur in the northern parts of America; those of the megatherium in the southern. The general structure appears to have been the same in both species; but the teeth of the megalonyx are cylindrical, while those of the larger megatherium have a prismatic quadrangular form. The megatherium appears to have stood about six or seven feet high, and to have been about twice that length; the megalonyx was about a third less. The megatherium appears to have had a coat of mail like an armadillo, which is quite inconsistent with the habits of the existing sloths, and the bones, where they differ from those of the sloths, stand a closer comparison with those of the armadillos. Like the three-

toed sloth, the *megatherium* had a small short head, without incisors or canine teeth, placed at the extremity of a long flexible neck, the malar bone (*Fig.* 100, *b*) prolonged downwards to a great extent over the lower jaw, and the ungual phalanges of the feet were disproportionately large; but there are very few parts of the whole skeleton which will suffer a close comparison with the corresponding parts of any existing sloth. Both the upper and lower jaws taper more forwards than in the sloths, but not so much as in the armadillos, where there are a greater variety of forms. The zygomatic arch is incomplete in the sloths, but is complete in the armadillos and in the megatherium. The arched form of the base of the lower jaw is unlike that of any sloth or armadillo, and the long, prismatic, quadrangular, bent, molar teeth, with their two transverse wedge-shaped cutting edges, are not like those of any other genus. They have an exterior sheath of enamel, as in sloths and armadillos, and in the megalonyx they are round, as in these two genera. There are scarcely any quadrupeds in which the teeth present greater varieties than in the armadillos. The vomer of the megatherium lately brought to this country is of enormous magnitude and strength, as in the fossil rhinoceros, as if to support a digging or defensive instrument upon the nose; there is no roughness, however, to indicate the site of any external organ of defence on that part. The nasal bones are remarkably short, and expanded laterally, and do not descend in the direction of the bent intermaxillaries, as if some fleshy organ, prolonged from the nose, had filled up this space. The cervical vertebræ (*Fig.* 100, *d*) are free for extensive motion, not anchylosed together, as we find several in the armadillos. From the great magnitude and strength of the spinous processes (*Fig.* 100, *e y*) of all the dorsal and lumbar vertebræ, it would appear that this animal had great force to overcome with this small head, and the same structure we observe in the vertebral column of the digging armadillos. The massive proportions and enormous weight of all the bones of the trunk, and still more of the extremities, are like those of some ponderous aquatic animal which waded in deep water, as the hippopotamus, for its food. The iliac bones (*Fig.* 100, *q*) surpass in their magnitude and expansion those of the largest elephant, but in form they more resemble those of the sloths than of the armadillos. In the extremities of this huge animal there are scarcely any parts which can be compared with the long slender bones of the feeble, climbing sloths. The scapulæ and clavicles are of enormous magnitude and strength, and indicate the force with which the humerus and the arm were moved. The anterior and posterior extremities are not disproportionately developed, as they are in sloths, but nearly equal, as in the armadillos and most other edentata. The radius and ulna, distinct throughout, cross each other as in the elephant, but the tibia and fibula are anchylosed to each other, both above and below, for a considerable extent. The hands and feet are lengthened and massive, and unsymmetrical in their development, as in many of the armadillos. By their length and their subdivision, and their great development at their distal extremities, they are well suited for scraping the loose surface, as in most of the edentata, but not for burrowing, as in the moles. The femur of this animal, though short, like all the bones of the arms and legs, has in its middle, when measured transversely, twice the diameter of that of the largest elephant of Asia, and its great trochanter presents an extensive surface for the insertion of the glutei muscles, which covered the exterior surface of these enormously expanded iliac bones. The megatherium appears to have been plantigrade, like the armadillos, but very unlike the sloths, which cannot place the planta of their feet upon the ground, from the extent and curvature of their ungual phalanges, and from the oblique direction of their feet. The ungual phalanges are the most anomalous parts of this singular skeleton, for, placed at the extremities of lengthened and, consequently, feeble feet, they are of enormous and disproportionate size; and although they formed a large sheath for the claws, they extended only a short way through those instruments, and afforded them but feeble support.

Thus we perceive, that in the skeletons of this edentulous group of quadrupeds, we are presented with forms the most diversified, and which generally indicate affinities with the inferior classes of vertebrata. This inferiority we observe, not only in the lengthened feeble toothless form of the head, the deficiency of the zygomatic arch, the rapid anchylosis of the cranial, pelvic, and other bones, and of the vertebræ of the neck, but also in the bird-like tapering form of the pubic bones, with their feeble symphysis, the junction of the pelvic bones to complete the sacro-sciatic foramen, and the existence of false ribs anterior to the true. So that while we thus approach by rapid strides to the highest stage of organic development on the earth, we still find lingering affinities with the inferior tribes though which we have passed.

CLINICAL LECTURE,

ON CASES OF

VENEREAL DISEASE,

Delivered at the Jervis-Street Hospital, Dublin.

By WILLIAM WALLACE, M.D., M.R.I.A., &c. &c.,

One of the Surgeons to the Hospital; and Surgeon to the Dublin Infirmary for the Treatment of Diseases of the Skin, including Venereal Diseases.

GENTLEMEN,—We have hitherto, when considering the treatment of the primary syphilitic ulcer, assumed the propriety of healing it by local applications as rapidly as possible. This principle is not, however, universally acknowledged, for by some it is argued, that if the primary sore be allowed to heal under the sole influence of constitutional remedies, we have thereby a security that the constitution has been freed from contamination; that the appearance of the ulcer, while the patient is using constitutional remedies, affords an unerring test whether such remedies are or are not agreeing with him; and that the practice of healing the primary sore by local means is useless, as it will not protect the constitution from contamination, nor diminish the necessity of constitutional treatment.

Let us consider the validity of these arguments. Does not the first assertion presume, that if there exists any virus in the system, the primary syphilitic sore will not heal spontaneously; or, in other words, that if the primary sore heal without local applications, while the system of the patient is under the action of mercury or other constitutional treatment, there can be no constitutional taint remaining? This assertion is, however, opposed to experience; for it has been amply proved, that the primary syphilitic sore may heal spontaneously after it has contaminated the system. Indeed it is a frequent occurrence to meet with patients who have not been conscious of having had a venereal sore, until their attention has been arrested by the unexpected appearance of constitutional symptoms, the primary sore having long before spontaneously healed. Is it not, therefore, evident, that the cicatrization of the primary sore, without the assistance of local remedies, can afford no criterion by which to judge whether the constitution is or is not free from contamination?

With respect to the second argument, I admit the occasional value of the appearance of the primary sore as a criterion of the influence of mercury on the system; but I affirm that this criterion can by no means be depended upon as much as has been supposed; for I have frequently observed the primary sore remain stationary, when the constitutional influence of mercury was, as far as we could judge, precisely what we could wish. Witness the case of William Whelan, at present under treatment. And on other occasions I have observed the sore to heal, when mercury was not acting beneficially on the system; that is, when it was not producing those constitutional effects which we are in the habit of supposing beneficial, but, on the contrary, rather opposite effects; that is, effects which we do not consider salutary. I have many cases noted which prove these assertions; but it would detain us too long to enter on their consideration.

I need not dwell on the third argument, because I do not recommend the rapid cicatrization of the primary venereal sore, with the expectation of preventing secondary symptoms. On the contrary, it is admitted by me, that however rapidly the sore may be healed, no positive security is thereby afforded to the constitution; and, consequently, I maintain that mercury must be employed in all cases of primary syphilis, in which this protecting remedy can be used with safety.

I had almost forgotten to tell you, that it is further argued that local applications to the primary syphilitic sore will oftentimes not only do no good, but may do much harm. For an answer to this argument, I refer you to the practice you daily witness. You can judge for yourselves whether the local applications used by me ever produce any unpleasant effects. I do not maintain that local applications can do no harm; such, indeed, would be a very erroneous assertion; and in proof of this I have no hesitation in giving it to you as my decided opinion, that unless a practitioner be well acquainted with the principles according to which the primary syphilitic sore should be treated locally, he will act a far more useful and more honest part to his patient, by leaving nature to travel in her own path.

It thus appears, Gentlemen, that the only advantage we can obtain by avoiding to heal the primary syphilitic sore as rapidly as possible by the influence of local remedies is, that the sore, if left to itself, may occasionally afford a criterion of the manner in which the constitutional treatment employed is agreeing with the patient. We shall find, however, that this argument is as nought, if considered in

opposition to the numerous advantages that result from the opposite practice. Moreover it is an argument, the value of which is greatly diminished, as we have numerous other means of ascertaining whether the constitutional influence of mercury be or be not beneficial. These I shall not now discuss, as I shall have occasion hereafter to call your attention expressly, and in a very particular manner, to the salutary as well as to the morbific actions of this medicine.

Let us now turn to the arguments in favour of healing by local treatment, and as rapidly as possible, the primary syphilitic sore. As long as the primary sore exists, the patient is liable to bubo, and as soon as this sore is perfectly cicatrized, the chance of bubo is greatly diminished. Hence, as the combination of bubo doubles, perhaps quadruples, the difficulty of treatment, and the inconvenience of the disease to the patient, the advantages of any method of cure which may diminish the chance of this very unpleasant symptom, are self-evident. Let me recal to your memory, that I have already demonstrated, by a reference to cases which you have seen treated, that the remedies employed by me to cause the rapid cicatrization of the primary syphilitic ulcer, have not the slightest tendency to produce bubo, or to increase the risk of bubo or its occurrence.

As long as the primary sore exists, there is danger of contamination of the system. Of this there can be no doubt. Nor can it be doubted that a primary sore may exist for a considerable time without infecting the constitution. Hence, as we are not acquainted with any means of ascertaining the period at which contamination occurs, it evidently follows that we should remove as quickly as possible its source, in hope that it may not as yet have taken place, and that we may still be in time to prevent its occurrence.

It is a remarkable fact, and one that is indispensable for you to bear in mind, that there exist certain forms of primary syphilis, which you will not be able to heal for months by constitutional remedies, however judiciously employed. In these cases local treatment is indispensable. Thus, the form of primary syphilis which Mr. EVANS has called *ulcus elevatum*, and to which I have given the name of fungous primary syphilis, oftentimes will not heal, although the system be acted on by mercury in an apparently very salutary manner, unless this action be assisted by local applications. In short, there are certain cases of primary syphilis, in which local treatment is more necessary, if possible, than constitutional treatment, as the sores can scarcely be got to heal by the latter, whereas by local applications they may be quickly cicatrized, even without the assistance of constitutional treatment. This must not, however, lead you to suppose that the constitutional treatment is of no value in such cases, for it certainly often contributes both to heal the primary sore, and to protect the constitution from contamination.

As long as the primary syphilitic sore exists, there is danger that parts of importance may be destroyed by its extension, or that symptoms of a more or less unpleasant nature may result, even on occasions when the ulcer is neither large nor alarming in any of its characters. Thus an ulcer on the glans penis, near the orifice of the urethra, may extend into that canal, and produce not only considerable present annoyance, but much permanent inconvenience. An ulcer at the side of the frænum will speedily destroy it, and, consequently, deprive the member of the use of this fold, whatever that use may be. I have seen a very small primary sore on the under surface of the glans penis penetrate into the urinary passage, and cause a fistulous trajet, which remained permanently open, and through which the urine was ever afterwards partially discharged. Again, I have seen a small ulcer, the progress of which could have been very easily stopped by local treatment, make its way slowly but steadily under the integuments of the dorsum of the penis, and cause a most teasing fistulous disease.

As long as a patient labours under a primary venereal ulcer, he is in danger, from even trifling indiscretions, of being attacked by very troublesome symptoms, independent of those to which I have already alluded. Thus inflammation, with or without phymosis or paraphymosis and all their train of unpleasant consequences, may result; whereas the chance of these is removed as soon as the primary sore has been healed.

Should an individual labouring under the primary syphilitic ulcer be seized with typhoid fever, or even fever complicated with a severe gastro-enteritic derangement, produced by debauchery or any other efficient cause, the most serious consequences, such as rapid and extensive sloughing, may follow. It has, in fact, been asserted by PLENCK, and more recently by SCHMIDT, that on such occasions death is inevitable. Although this is an exaggeration, there is no doubt that the state of system which accompanies certain forms of fever, gives the primary syphilitic ulcer a remarkable tendency to

slough in the most destructive manner. It may, I admit, be said, that the chance of a person being seized with fever of these types is so trifling, that an argument founded on such a contingency in favour of healing rapidly, by local remedies, the primary syphilitic sore, does not deserve much consideration. It, however, deserves some, and adds to the other arguments that it is our duty to cause, by every means in our power, the rapid cicatrization of all primary syphilitic sores. In truth, when I consider the subject maturely, I cannot account for the proposal having ever been made, to heal such sores by the sole influence of constitutional remedies, unless I attribute it to the old doctrine, that the venereal disease could not be removed without the constitutional action of its supposed never-failing antidote—mercury, and that the primary sore would not heal spontaneously. The falsity, however, of these dogmas has long since been proved, although the practice founded on them has, in some measure, persisted.

Gentlemen, I have been speaking, up to the present moment, of the local treatment of only one form of primary syphilis, —of that form which I consider the prototype of the others, because it constitutes a centre round which the others may be arranged, and because I have found that it is the form which would generally occur if the disease were not interfered with by peculiarity of constitution, or of treatment. But although this be the most common form, and will present itself to your observation more frequently than all the others collectively, it is indispensable that you be acquainted with the mode of treatment which should be adopted in the more rare varieties.

I have ascertained that strikingly peculiar appearances in the primary sores of syphilis do not always demand any very great peculiarity of treatment. There are, however, varieties of the primary sore which do require very peculiar modes of treatment, and if such varieties be not treated in the peculiar manner suited to them, the most serious consequences will almost certainly result. These facts afford a basis for a practical arrangement of the observations which I have to make on the treatment of the varieties of primary syphilis. Thus, I shall consider under one head, such varieties, however dissimilar in appearance, as should be treated after the same manner as the common form of primary syphilis; and, under a second head, such as require a greater or lesser deviation from that treatment. I shall consider the former in the first instance, and afterwards the latter; and as in the classification of primary syphilitic diseases adopted by me, the phagedenic varieties follow the common disease, I now propose to examine the question whether any of the phagedenic forms of primary syphilis admit the same treatment as that suited to the common form, and if so, what are the characters by which they may be distinguished from such phagedenic varieties as do not admit of the same treatment. These are, Gentlemen, highly important questions, and well deserving our serious attention.

I have first to observe that, by the term phagedenic primary syphilis, you are to understand a form of primary syphilis, distinguished by unusual severity,—a form which is more destructive, or more obstinate, or more rapid in its progress, than the common form, let the cause be what it may, from which these characters arise; but you are not to receive this term as implying that the poison which produces such forms of disease, is in the slightest degree different from that which, under other circumstances, produces the common disease, nor as denoting any idea respecting the manner in which the disease extends, that is whether it extends by sloughing or by ulceration, or by a combination or alternation of those destructive processes. In thus using the term "phagedena," to express all forms of destructive sore, whether sloughing or ulcerative, I have followed the views of my late excellent friend and early preceptor, Mr. Abernethy. Indeed, owing to the very frequent conjunction, in the same sore, of the perfectly analogous processes of sloughing and ulceration, it is indispensable, practically speaking, to consider all such sores under the same generic head. Let me add, that were I to enter upon an exposition of my particular views respecting the relationship of ulceration and sloughing, or on a refutation of the prevailing erroneous hypothesis which attributes ulceration to the action of the absorbents, I could remove all doubt of the propriety of the arrangement which I adopt. This, however, would take me too far from my present subject, and I must be content with repeating, that when I use the term "phagedena," I do not imply the mode in which the disease extends. I simply imply a destructive form of disease; nor do I imply that the destructive character has any peculiar exclusive cause, and still less that it is owing to any peculiarity in the poison which has produced it.

Case 1. — *Phagedenic Primary Syphilis, extending by Ulceration, unaccompanied by Inflammation and Irritability; Or Simple Phagedenic primary Syphilis, treated with the Nitrate of Silver and Mercury.*

The first case of phagedenic primary syphilis to which I wish to direct your attention, is that of John Egan, a man aged 28 years. I shall now read you the report of his case, and afterwards make such remarks on it as are necessary.

1st day. The upper half of the circumference of the prepuce has been removed, by ulceration, to a level with the corona glandis. The ulcer thus formed is nearly two inches long, and one inch broad. Its surface, which presents a dirty-white colour, is slightly raised in the middle. Its edge, which is sharp and nibbled, or serrated, slightly overhangs its surface, owing to its margin being formed into a groove. Hence the sore appears to be ulcerating at the circumference, while it is granulating in the centre. The areola is livid-coloured, and the base is tumid and hard. There is but little pain felt in the part, nor is it very sensitive when touched, yet the patient's countenance is pallid and languid, as if he was very much worn by the disease. The ulcer commenced (to use the patient's words) by a pimple about twelve days ago, and he has not done anything as yet for it, except keeping it clean. The glands of his groin are free from enlargement. The nitrate of silver was applied in the usual manner as an escharotic to the circumference of the ulcer by Mr. Thorpe (a gentleman who is, it gratifies me to say, distinguishing himself by particular attention to all his hospital duties), and it was directed that two of the calomel and tartar-emetic pills should be taken four times a day.

2nd day. The patient reports that he suffered much pain for some hours after the application of the nitrate of silver, but that he has had no pain whatever since yesterday evening. The surface of the ulcer is much redder, and in the middle less fungous-looking. Water dressing was applied, and the pills were continued.

3rd day. The extent of the ulcer is diminished, owing to a contraction from its circumference towards its centre, and the penis is much less swelled. A red healing margin has formed at the sides of the ulcer, but its extremities are still bounded by a diffused livid areola. The granulations of the surface of the sore are of a much healthier colour, and the edges no longer appear serrated or nibbled, or undermined. The groins continue free from disease. Mouth slightly affected by the pills. The general surface of the ulcer was stimulated with the strong solution of the nitrate of silver, and this medicine was applied as an escharotic to the extremities of the ulcer. It was directed that the pills should be continued, but taken only twice daily.

5th day. The extent of the ulcer is still further diminished, and its extremities, as well as its sides, now present healing margins, so that the whole circumference of the sore is surrounded by a well-defined red line; the soreness of his mouth is slightly increased. The same local treatment of the surface of the sore employed on the last day was repeated, and it was directed that only two pills of calomel and tartar emetic should be taken daily.

10th day. All the swelling of the penis has disappeared, and the sore is greatly diminished in extent, partly by its extremities approximating each other, but principally by the approach of its sides, which are now in some parts joined, and the sore is therefore in such parts healed across. Scarcely any new cuticle, or reparatory granulations, have been formed, for the ulcer appears to be healing entirely by the junction of its borders. His mouth continues sore. His stomach has become irritable, or disposed to vomit, and he has much thirst. Sleeps badly; tongue white. He is chilly during the day. Pulse 96; bowels regular. His pills were omitted, and he was directed to live for two or three days on demulcent liquids or slops.

13th day. The sore is healed, with scarcely any hardness of base, and the patient feels himself quite well. His mouth is only very slightly affected. Two of the pills were directed to be taken each night.

Remarks.—The extent and the destructive character of the ulceration in this case gives it a place among the phagedenic forms of primary syphilis, while its freedom from slough, and from inflammation and irritability, decides that it was an example of that form of primary syphilis which I have named *the simple phagedenic primary ulcer.* If you turn to the description given of this ulcer by me, you will find that the case in question corresponds in all respects with that description. The ulcer commenced by a pimple or pustule; it extended its ravages with rapidity, although it was not attended by either pain, inflammation, or irritability; it was, to use the phraseology which I have introduced, free from slough, of both a white and black character; granulations of an unhealthy appearance commenced in the centre of the sore, while ulceration was advancing rapidly at its circumference. But I have still to call your attention to its most remarkable character—

the rapidity with which it yielded to the conjoined influence of the nitrate of silver locally, and mercury constitutionally. On the fifth day after this treatment had been commenced, reparatory actions were established in every part of the sore, and it was perfectly cicatrized on the thirteenth day.

You will remember, Gentlemen, that on a former occasion, I laid it down as a rule of practice, that during the stage of ulceration of the common form of primary syphilis, *unless accompanied by bubo* (remember this exception), you should avoid the administration of mercury, partly because this medicine, administered during that stage, often disagrees with those constitutions in which the common disease occurs, partly because the common disease does not advance so rapidly as to make it worth our while to run any risk for the sake of stopping its progress, and partly because the nitrate of silver, properly applied, is uniformly sufficient for this purpose. Our practice, however, must be different in the form of syphilis which we are now considering, because this form extends so rapidly, that it is incumbent on us to put in requisition every means in our power to stop its progress; because the nitrate of silver, unassisted by mercury, may not be sufficient for this purpose; and because, in this form of disease, or, more correctly speaking, in constitutions subject to have this form of disease excited in them by the venereal poison, mercury, employed during the process of ulceration, is not so likely to cause mischief, if administered in a proper manner, as it is when administered during the same stage of the common disease. Why this should be the case, we may find it difficult to explain, but we are not therefore to deny the evidence of experience.

CASE 2.—*Simple Phagedenic Primary Syphilis, with White Slough, or Primary Syphilis extending by White Slough, and unaccompanied by Inflammation or Irritability, but complicated with Bubo. Treated with the Nitrate of Silver and Mercury.*

Let me now direct your attention to another form of phagedenic primary syphilis, which was well exemplified in the case of Ned Hart, a robust man, aged 21, employed as a labourer in the canal boats. His case is thus reported:—

1st day. Penis much enlarged, yet free from inflammation. The internal surface of the prepuce, from very near its orifice on the right side to the corona glandis on the same side, is almost entirely occupied by four ulcers, which are of various sizes, from that of the end of a finger to that of a pea. They are deeply excavated, and seated on a very hard basis. Their surfaces are somewhat brownish, but their edges and margins are of an ash-white colour. When the prepuce is drawn forwards, or so as to cover the glans penis, a great induration is felt through the skin on the site of the ulcer; and when the prepuce is drawn back, so as to uncover the glans, the ulcers and the lining membrane of the prepuce surrounding them, suddenly project—the latter being of a whitish or cartilaginous colour. The portion of skin separating the ulcers from each other is so very narrow, that their whitish areolar margins almost meet, and give an appearance as if the ulcers would quickly form one, by the destruction of the narrow segments of skin by which they are bounded and separated from each other. On the whole the parts have a very alarming aspect, yet there is no appearance of inflammation round the sores, nor are they sensitive, although they are occasionally the seat of severely stinging pains. There is a tumour rather larger than a pigeon's egg in the right groin. The surrounding cellular tissue feels engaged, and the superincumbent skin presents a slight blush of red. He has had the ulcers fourteen days, and the bubo nearly the same time. During the last four days the ulcers have rapidly increased. The nitrate of silver was applied as an escharotic to the surface of the ulcers. Sixteen ounces of blood were taken from the arm, which caused syncope, and it was directed that two of the calomel and tartar-emetic pills should be taken every two hours.

2nd day. Has had no pain in the ulcer since the pain caused by the caustic ceased (that is, four hours after its application). He cannot expose the ulcers to-day, in consequence of a tightening of the prepuce, yet the penis is not in any way inflamed. Scarcely any pain is produced by pressing the outer surface of the prepuce, where it corresponds with the ulcers, but in this situation a very hard, circumscribed, and unyielding tumour may still be felt. He says that there is considerable whitish watery discharge from the orifice of the prepuce. The bubo does not appear to be any smaller, yet he considers it much better, and says it is free from pain. He has taken twelve pills. His mouth is not affected.

4th day. The penis is less swelled, and the hardness in seat of ulcers is diminished. The prepuce is looser, yet he is still unable to denude the glans, or expose the ulcers. The discharge from the orifice of prepuce continues. The tumour in the groin is smaller and harder, and the skin covering it is free from preternatural red-

ness. Has no pain in either his groin or penis. Has taken eighteen pills since last report. Mouth tender. The prepuce was injected with the strong solution of the nitrate of silver, and the number of the calomel and tartar-emetic pills was diminished to two, night and morning.

8th day. The tumour in the groin is much less, and is free from pain. It has lost its oval form, and assumed the appearance of a longitudinal welt. On denuding the glans, which was now done without difficulty, the sores appear almost quite healed. The basis, however, on which they were placed, still feels tumid and hard; and the corresponding surface of the prepuce appears, when first denuded, whitish or cartilaginous-looking; but when the prepuce remains, for a minute, drawn back, the former ulcerated surface (probably in part from exposure, and in part from obstruction to the circulation, by the contraction of the orifice of the prepuce) becomes red at the circumference, where it is covered by a very thin cuticle, but remains white in the centre, where it appears covered by a stratum of lymph. There is a small ulcer, not before noticed, now observable on the glans penis. The patient has taken in all forty pills. His mouth is decidedly, though slightly, affected by them. The white centres of the ulcers were stimulated by the solution of the nitrate of silver, and it was directed that he should continue to take two of the pills of calomel and tartar-emetic, night and morning.

10th day. The sores are perfectly cicatrized, and the hardness of their base is much diminished. The tumour in the groin is rather fuller, which he attributes to his having been under the necessity of walking a great deal yesterday. His teeth pain him much during mastication. The pills were omitted, and a dose of the sulphate of soda was ordered.

12th day. Bubo has disappeared. Says he remained quiet for the last two days, and that the sulphate of soda operated very fully. His mouth is much less sore. The pills were repeated.

Remarks.—I need not detain you further *at present* with the reports of this case, but we must consider several points connected with it. What were the peculiar characters of the sore, or its diagnostic symptoms? What were the principles which directed its treatment? and what was the result of the treatment adopted?

The extent and rapidity of the destructive processes at once determines that it was a phagedenic form of disease, but to which of the varieties of phagedena did it belong? You will be able to answer this question, if you recollect the manner in which the sores extended themselves. You remember that their margin was dead, that the slips of skin separating the ulcers from each other, were also nearly dead. The disease, therefore, extended by slough. The next question to determine is, to which of the varieties of sloughing phagedena did it belong? To the white or to the black? You know that the margins of the ulcers were formed of a slough of a white colour, therefore it belonged to the former. (I shall not now stop to prove the error of the opinion that this appearance is owing to matter adhering to the surface of the sore, and that it is a secretion and not a slough; this subject I have elsewhere discussed.) Lastly, of which of the varieties of white phagedena did it afford an example? The varieties of each of the three forms of phagedena, which I have elsewhere described, are arranged according to the degree of accompanying inflammation and irritability. Now the sore in the present case was neither inflamed nor irritable, and, consequently, it was an example of that variety of phagedena which is not accompanied by either inflammation or irritability—that is, of the simple white phagedenic primary syphilis—a form of phagedena uniformly accompanied by great induration of the base on which the ulcers are placed, and this character existed in a very striking degree in the present case.

What were the principles which directed the local treatment? Almost precisely those that regulate the treatment of the destructive stages of the regular form of primary syphilis, and I am sure you are now so well acquainted with my views on this subject, that it is unnecessary to enlarge on them.

Some of you may, perhaps, inquire why general was bleeding employed when there existed no inflammation? I will tell you why, for it is important that you should be acquainted with the object I had in view,—It was to dispose the constitution of the patient to be acted on with rapidity by mercury. I had two very important ends to be gained by the operation of this medicine; the resolution of the bubo which had entered on its third stage, as well as the interruption to the process of sloughing, which was causing the rapid destruction of the prepuce; and I know, from long and careful attention to the action of mercury, that neither the one nor the other could be effected, in such cases as the present by the slow operation of this medicine. On the contrary, while the rapid action of mercury almost uniformly produces in them the highly beneficial effects which

you witnessed in the case of Hart, its tardy action would almost as certainly cause an extension of the destructive process, and an increase of the accompanying bubo. Should you ask how I know that blood-letting has the effect which I have affirmed, I answer that my knowledge on this point is derived from the only source of knowledge in practical medicine—experience. The sudden abstraction of blood from a full habit, such as this patient possessed, promotes, in a very great degree, the salutary action of mercury. Let me, however, observe, that you are not from this to conclude that a debilitated habit is favourable to mercury —the very opposite is probably the fact. Debility is in general attended by excitability, which is almost always inimical to mercurial action, therefore you are to distinguish well between the influence on the action of mercury of that temporary state of relaxation, I will call it, which is produced in a full system by the removal of a dash of blood, and a state of general debility, from whatever cause arising.

The remarks on the result of the treatment need not be long, for of this you are all able to judge. If I can form any idea of your reflections respecting the treatment pursued, those of you who for the first time witnessed my mode of practice in such cases as the present were equally astonished by its novelty, and by the favourable consequences which followed; nor do I wonder that your sentiments were those of surprise. I do not exaggerate, I assure you, Gentlemen, in affirming, that if this case, which was I may say in the space of twelve days so happily rescued from all risk of mischief, had been subjected to the routine treatment of the day, the most serious consequences would almost certainly have resulted. The prepuce would have been totally, or in part destroyed, the bubo would have suppurated, and a long train of serious symptoms, accompanied by great injury to the constitution, would most probably have followed. How different were the results of the treatment adopted!

Venesectors.—Celsus terms the instrument for opening a vein *scalpellus*. All the lower Latin writers, *phlebotomus*. The word *lancet* was borrowed by the French from the ancient Gauls, and by us from the French. Albucasis calls it *alnessil*. Myrtle and olive leaves were anciently used for bleeding by puncture.

LECTURES ON SURGERY,

BY

MR. WARDROP.

ON THE SANGUINEOUS SYSTEM.

ABSTRACTION OF BLOOD (CONCLUDED).*

Curative Effects of Blood-letting,—in Fevers,—in Eruptive Fevers,—Scarlet Fever —Small-Pox,—Erysipelas,—in Inflammations,—in Congestions,—in Suppurated Parts,—in Sloughing Ulcers,—in Ulcerated Legs,—in Wounds.—Some Anomalous Effects of Blood-letting.—Concluding Observations.

On the Curative Effects of Blood-letting.

Having, in the foregoing lectures, endeavoured to explain most of the important circumstances connected with the subject of blood-letting,—particularly the differences in the effects of abstracting blood from the arterial and venous systems,—the differences in the effects of local and general bleeding,—the indications for employing each of these modes of abstracting blood,—the extent to which blood-letting ought to be carried, and how it is to be regulated,—and having also enumerated those states of the system wherein blood-letting is injurious,—before concluding this interesting subject, I propose to make a few observations on its curative effects, and glance over those various classes of diseases to which your attention ought to be particularly directed in the employment of this useful remedy.

In febrile diseases (the class of "pyrexiæ" of Cullen), blood-letting, as a general remedy, must be considered one of the most powerful, whether we contemplate its effects in the treatment of "fevers," properly so called,—in the "phlegmasiæ," where there is an inflammation of some particular organ,—or in the order of "exanthematous, or eruptive, fevers."

In Fevers.—In the treatment of fever there has been much controversy on the propriety of blood-letting, and which, like most other discrepancies in medical opinions, is, I believe, to be chiefly attributed to the observations of different writers not having been made under the same circumstances, and there being no class of diseases that assumes a greater variety of type than fevers, not only in different

* The word *couch ded* was printed by mistake for *continued* at the head of the lecture, page 816.

countries and in different classes of the community, but even in different years and seasons in the same place. That fever which at one period, and in one class of persons, is mild, may, in a short time, assume the greatest severity; whilst that which at another period appears in a severe and inflammatory form, demanding most energetic depletion, may, at no very distant period, commence with typhoid symptoms, and require a perfectly opposite system of treatment. Hence all histories of febrile diseases, made at different periods, and at different places, present an unaccountable variety of character; and therefore, in the treatment of this class of diseases, all that you ought to attempt is to establish such *general* principles as shall be applicable to the different forms or types in which the fever may present itself; and here again we must trust to a judicious discrimination, and an experienced eye, for detecting the peculiarities of each case; as even in the same family, instances will occur of a fever assuming an inflammatory character in one of its members, and in another a typhoid form.

The practice of avoiding the use of all depletive means in the treatment of fevers, has been, until late years, very generally followed. Dr. HAMILTON first pointed out the essential benefit to be derived from the free use of *purgative* medicines, and our army and navy surgeons had many opportunities, during the last war, of establishing the advantages to be derived from a judicious employment of blood-letting in those fevers which, in different parts of the globe, had usually been considered as requiring an opposite system of treatment.

The objections to the use of blood-letting in fever were founded merely on hypotheses, and on the erroneous notions that such diseases had to run through a certain course—to have a certain duration, which could not be shortened, whence it became necessary that all resources of the system should be husbanded, in place of abstracting blood, or of adopting any mode of treatment which should cause a still further exhaustion of the vital powers.

Case.—It is not long since I had an opportunity of witnessing the fallacy of this doctrine in the case of a youth who was attacked with fever, and whom I accidentally saw just when he was brought from school, at the commencement of the disease. He complained of a violent headach, had a flushed countenance, a typhoid tongue, a hot and dry skin, and a rapid pulse. I immediately bled him at the arm, when in the supine posture, until he fainted, ordering him a dose of James's powder and calomel every four hours, alternately with a purgative. The physician who attended the family was afterwards sent for, and he visited the patient in a few hours, and when he heard the history of the case, and observed the character of the tongue, he expressed his decided opinion that the depletive system of treatment would be injurious, that the patient had all the symptoms of typhus fever, which would endure twenty-one days, and that it would be followed by such a train of symptoms of exhaustion and debility, that in place of blood-letting the very opposite system of treatment ought to have been pursued. Contrary, however, to this prediction, the bleeding completely and permanently relieved the head, the skin and alimentary canal were powerfully operated upon by the antimony and calomel, and so early as the ninth day the febrile symptoms abated.

In Eruptive Fevers, the abstraction of blood, whether general or local, you will find in some cases a powerful remedy; and, as I have noticed in regard to fevers, it is not many years since blood-letting was first employed in the treatment of exanthematous diseases,—and from an impression that they also had to "run their course," and that the great exhaustion necessarily created by the disease, required all the resources and powers of the system to support the patient, in place of any further debility being caused by depletion.

Numerous facts have proved the fallacy, indeed the absurdity, of such a doctrine. There is no febrile disease, even of a specific character, such as small-pox, measles, scarlet fever, or hooping-cough, wherein blood-letting may not be advantageously employed under certain circumstances, particularly during the early stages of these maladies.

When noticing the injurious effects of blood-letting in *specific* diseases, I observed, that in syphilis and gout, besides the specific inflammation which forms the essential character of those complaints, there are often symptoms of another character, symptoms which arise from the presence of an idiopathic or common inflammation being present at the same time, and which inflammation is to be subdued by blood-letting. Now this observation is applicable to the phenomena observed in the eruptive fevers, and you will find that these diseases may be accompanied by inflammatory symptoms, or with an idiopathic inflammation in a particular organ, which requires a separate system of treatment.

In Scarlet Fever.—Blood-letting may

also be resorted to in the early stages of this disease, particularly when there is a determination of blood to any particular part, as the chest and head. Sometimes the inflammation of the throat, the characteristic feature in this disease, is so severe, that much relief is obtained by a local bleeding, more or less profuse; but when any of the vital organs are affected, then venesection is preferable.

There is in this disease, as in erysipelas and other of the exanthemata, a notion with many, that patients cannot endure a depletive system, or that such is unnecessary for their treatment. It cannot be denied that, like most other diseases, the scarlet fever in many cases passes through a very mild course, having scarcely a symptom requiring any particular treatment; and there are other examples wherein the pulse from the very commencement of the disease is feeble, and the powers of life sink rapidly. You ought also to be aware, that cases of scarlatina do occur where severe inflammatory symptoms come on, and of that type wherein blood-letting is highly to be recommended. The additional vigour which the pulse acquires whilst the blood flows from the vein, will be an unerring guide for estimating the propriety of the measure, and the extent to which it should be carried.

Case.—A gentleman between fifty and sixty years of age was seized with shivering, succeeded by hot skin and other febrile symptoms. On the evening of the same day I visited him. His mind was restless and a good deal excited; his skin hot and burning, his tongue white and loaded, the pulse frequent, and he had tumultuous action of the heart. He had a flushed countenance, the tint of which, along with a slight redness of his throat, made me suspicious that he had an attack of scarlet fever. He was immediately bled at the arm; at first the pulse rose, and a considerable quantity of blood was abstracted before he became faint. Calomel, combined with antimony, and a purgative medicine, were then given alternately every two hours. Next morning the febrile symptoms were much subdued, but his throat had become very painful. Twenty-four leeches were now applied to the external fauces, with relief. In a few hours afterwards he was again bled at the arm, a slight return of headach, with fever, having come on. These symptoms never returned; a fetid slough separated from the tonsils, and he afterwards recovered daily, and was very rapidly restored to health.

From the treatment which was adopted in this case and its decided success, doubts were entertained of its having been really a case of scarlet fever; but those doubts vanished when that disease made its appearance a few days afterwards in two children of his family.

In Small-pox.—The benefit of blood-letting, when the febrile symptoms are severe, or when inflammation affects any particular organ, is equally great. An intelligent surgeon in the army informed me that he made it a general rule, from which he had experienced the greatest benefit, always to bleed soldiers on the commencement of the fever preceding the eruption.

Case.—A lady was attacked with severe febrile symptoms, for which she was profusely bled, and with great relief. On the following morning it appeared that she was afflicted with small-pox, and her medical attendant at first expressed his regret for having had recourse to venesection. Such, however, was the mild progress of the disease, comparing it with that of many who were affected in the same town, that all were convinced the blood-letting had been highly beneficial, and had mitigated the febrile symptoms.

In Erysipelas.—When speaking of the effects of local bleeding, I remarked that its benefits were exemplified very strikingly in cases of erysipelas, by the profuse hemorrhage which followed incisions made into the inflamed integuments. Such a practice will, however, I am persuaded, be seldom found necessary, if blood-letting be had recourse to in the early stage of that disease.

From a supposed typhoid character of erysipelas, it was the general practice, and is still with some, never to deplete or pursue an antiphlogistic plan of treatment; and I well remember visiting a lady who was suffering from a very severe attack of erysipelas in the face, and finding at her bed-side a large tumbler of wine-and-water, and that she was taking as much bark as she could receive. By bleeding her freely, and repeating the operation three successive times at short intervals, along with purging and antimonial medicine, she rapidly recovered; and the medical attendant who first saw her, expressed his surprise at the treatment I had employed, remarking, that during a long attendance at a public hospital, he had never seen blood-letting employed in erysipelas, and adding, that nearly all the cases he had seen of that disease affecting the face and head had terminated fatally.

In erysipelas there is usually a peculiar feeling in the pulse, which is apt to dis-

suade the practitioner from employing blood-letting; the pulse is small, but more or less incompressible, and whilst the blood is flowing from the vein, it acquires more and more volume, and often a very considerable quantity is abstracted before a fainting state supervenes.

In Inflammatory Diseases. — In the treatment of all inflammations (the phlegmasiæ of Cullen) the abstraction of blood is a most powerful curative means, and, as I have already noticed when speaking of general blood-letting, whenever there is any organ under the influence of inflammation, and that inflammation is accompanied by febrile excitement, the abstraction of blood should be unhesitatingly employed; under such circumstances, the blood should be abstracted from the arm whilst the patient is in the recumbent position, until syncope is produced, and repeated whenever the pulse rises, and until the febrile symptoms are subdued.

Even after these symptoms have been subdued it may be found that there still exists some determination to a particular organ, such as the head, chest, or abdomen, in which case local bleeding should be resorted to. By the general blood-letting the increased action of the vascular system is diminished, but in most cases local bleedings are subsequently necessary to check the undue action of the capillaries of the inflamed part. It is always of importance, however, in the treatment of inflammation, that the general should precede the local bleeding. Every day you will meet with cases wherein local bleeding has been employed without benefit, and in which, when general bleeding is afterwards adopted, the symptoms at once subside.

In Congestion.—The observations I have hitherto made on the curative effects of blood-letting apply chiefly to the employment of it in the treatment of diseases of an inflammatory character. But there is another class of cases wherein the abstraction of blood is an equally powerful remedy, and in which the propriety and extent of the depletion are indicated by a different assemblage of symptoms. I allude to congestion or *plethora* of a particular organ or region of the body.

This state of congestion I have already endeavoured to point out is very different from inflammation; in congestion the vascular system, more particularly the veins of the affected part, being preternaturally distended with blood, whilst in an organ which is inflamed, there is a change in the condition of the arterial capillaries. A mere congestion of blood can be artificially produced in the arm by tying a ligature around it, and thus distending the veins. There is no alteration in structure thus produced, but merely an increase in the quantity of blood, which, if you could suppose the limb was removed from the body and immersed in water, would be washed away. Congestion, I have also observed, ought to be discriminated from an irregular distribution of blood, examples of which we have in flushings of the cheek,—the effects of friction on the skin,—the presence of a mote in the eye,—and in many of those headachs which are usually called nervous. Now in cases of congestion, bleeding should not be generally carried to the same extent as in inflammations, and the blood is to be removed either from the vessels immediately connected with the diseased organ or remote from it. Leeches on the frontal vessels, or the ethmoidal vessels ramified on the septum of the nose, or applied behind the ears, where an artery as well as a vein make their exit from the brain, or cupping the nape of the neck, are the modes best adapted for relieving congestion within the head.

Leeches or cupping may, in like manner, be employed on the parietes of the thorax and abdomen in congestions of the viscera; and leeches on the verge of the anus are particularly beneficial in abdominal congestions, from the circumstance I have formerly stated, of the connexion which the hemorrhoidal veins have with the portal system.

Whatever theory or explanation may be given, there cannot be a doubt of the fact, that many diseases of the thoracic, chylopoietic, and uterine systems, are essentially relieved by the application of leeches to the feet; and this practice of removing blood from a distant part is equally remarkable in disorders of the head, these being often relieved by the escape of even a few drops of blood from the hemorrhoidal vessels.

There are other cases of congestion where blood-letting must be carried to a great extent, more particularly where the brain or chest is the seat of the disease, life then being often in more or less danger, and the only mode of preserving it being the abstraction of such a quantity of blood as to produce syncope.

Case.—A gentleman, about sixty years of age, and of a sanguineous temperament, was suddenly seized with giddiness, at which he was alarmed, and I visited him immediately. There was so little deviation from the natural state of his pulse, that I even hesitated whether to take some blood by venesection or by cup-

ping. The former mode being determined on, he was placed in a reclining posture on a sofa, a wash-hand basin put underneath his arm, into which the blood flowed freely; his pulse soon began to rise, and an incompressible feeling remained in it, until a large quantity of blood was abstracted; at last it began to sink, but not until such a quantity of blood had escaped as I would not have ventured to take away, had not the character of the pulse and the plethoric appearance of the patient given me confidence. Except purgatives sufficiently freely to open the bowels, he took no other medicines. On the following day he felt so little the effect of the depletion, that he dined at a club, and on the following evening he was so well as to be able to attend his duty in the House of Commons. The blood he lost was accurately weighed, and amounted to no less than fifty-two ounces; a quantity many practitioners may have removed in cases of great urgency; yet, what was remarkable in this case, was that none of those debilitating effects were produced which might reasonably have been anticipated from so large a depletion, and what was most satisfactory, this patient continued several years after in most perfect health.

I have already remarked, when speaking of the *injurious* effects of blood-letting in paralytic affections arising from congestion in the brain, or when effusion of blood has actually taken place, that bleeding cannot be carried far in proportion to the severity of the symptoms; on the contrary, in proportion as the attack is severe, a lesser quantity of blood only can be removed with safety. That is, a person who has an attack of palsy, destroying at once the power of the upper and lower extremities of one side, and also that of speech, cannot spare so much blood as the same person could have done, and ought to have lost, previous to the attack, had its approach been observed.

In proportion to the severity of the injury sustained by the brain, so does the system suffer from the shock; and hence in the degree which the powers of life are diminished, so will the system be the less able to support the abstraction of a large quantity of blood.

Case.—A man forty-five years of age, whose habits were extremely dissipated, and who drank frequently to intoxication, lost suddenly the power of speech, and the whole of his left side became motionless. In this state I opened a vein in his arm, and after a very few ounces of blood escaped, his pulse sank, and on repeating the operation a few hours afterwards, his pulse again faded, after a very small quantity was removed. Having freely evacuated the bowels, and taking calomel every few hours, at last the mercury affected his gums, and a sharp ptyalism supervened, which was followed by a gradual restoration of the powers of speech, as well as of the use of the paralysed extremities. A seton was afterwards introduced into the nape of the neck; and I saw this patient upwards of four years after this attack, having recovered his speech, and that of the use of his side so perfectly, as to enable him to be employed in his business as a watch-maker.

When, on the other hand, the approach of a paralytic attack is foreseen, or even the symptoms slightly commenced, it is astonishing to what an extent blood-letting must sometimes be carried, in order to check the progress of the malady.

Case.—A patient called on me, complaining of a numbness in the muscles of the right arm, and a tingling sensation in the fingers, which symptoms he had first perceived on shaving himself that morning. His pulse did not appear much changed, but it was not easily compressed. The action of the heart was unnaturally vigorous; his countenance had a tumid appearance and a leaden colour, but he had no uneasy feelings in his head, though he had walked a considerable distance to my house. I advised him to return home in a coach, and to be immediately bled in the horizontal posture, and forty-four ounces of blood were abstracted before syncope came on. The pulse soon began again to rise, and he was largely bled a second time twelve hours after the first bleeding, and also until he fainted. In forty-eight hours after the first bleeding, the action of the heart and arteries had greatly increased, accompanied with feelings of stupor and giddiness, notwithstanding his bowels had been very freely evacuated; he was therefore again bled at the arm till syncope came on, having lost in the three bleedings no less than a hundred and six ounces of blood! A few doses of calomel, which had been given along with strong purgatives, in a few days affected his gums, and created a good deal of mercurial fever, but his strength rapidly recovered after this went off, and in a few weeks all numbness left his arm, and its motions were so completely restored, that he could use a pen as well as before his illness.

In Chronic Inflammations.—When inflammation assumes a chronic, or passive, or subacute form, the abstraction of blood is an equally useful remedy as when inflammation is in its acute stage. The

above terms have each been employed to denote the state of an inflamed part wherein there is no longer any febrile excitement, —no disturbance in the action of the heart and arteries, but where there is a change merely in the functions of the capillary system, and hence, as I have already remarked, it is in this stage of inflammation that local is usually preferable to general blood-letting.

In such cases I have been in the habit of recommending the frequent repetition of small bleedings in place of one or more large depletions, and I have often been both surprised and gratified with the benefit of this practice. A person afflicted with some chronic inflammation, and whose strength could not support anything like a severe depletive system, will often gain vigour and health during the daily use of two or three leeches on a diseased part.

Case.—A young lady, of feeble constitution, had a gland in the neck enlarge suddenly. It was tender to the touch, but she had no febrile symptoms. I advised her to apply leeches daily, beginning with four and diminishing the number as the swelling abated, which treatment, along with fomentations and poultices, greatly relieved her, and the swelling gradually diminished. But the leeches were employed no less than seventeen times on this as well as on another enlarged gland before all tenderness went off, and what surprised her relatives was, that at the termination of this treatment her general health and strength had improved, and she had regained flesh.

Case.—A girl, about six years of age, had a scrofulous affection of the second joint of the thumb. A considerable enlargement having taken place of the soft parts, with slight discoloration and tenderness, two leeches were daily applied for one week,—one during the subsequent week, and one every second or third day afterwards, until the swelling completely vanished; after which treatment her general health was greatly improved.

There are many inflammatory subacute affections which you will find yield to a similar system of treatment. There appears indeed to be a very different effect produced by small and frequent bleedings in such cases to that by larger depletions; and in adopting this practice you will have little difficulty in regulating either the number of leeches necessary to be applied, or the frequency of their application. At first the bites may bleed very profusely, whilst their future applications yield comparatively little blood, and their use should be repeated as long as the blood they draw affords decided relief. I need scarcely remark, that whilst this system of local bleeding is pursued, it is not meant to preclude the use of other auxiliary remedies.

In Suppurated Parts.—It is usually considered that when an inflamed part has advanced to suppuration, the future treatment ought to be altogether directed to the healing of the abscess, for which poultices and free incisions are frequently employed.

It is true, that usually when the contents of an abscess are discharged, the accompanying pain as well as inflammation abates, but this is not the case on all occasions; and it is in such cases, and under such circumstances, where I have found local blood-letting essentially useful.

In most cases of cellular as well as glandular inflammation, the purulent fluid which is collected and forms the abscess, does not make its escape if left to nature until all the circumjacent swelling and inflammation have abated. But if the matter has been artificially evacuated, and the surrounding swelling and inflammation are unsubdued, then the daily application of leeches to the inflamed integuments you will find most useful; and whilst the inflammatory symptoms are thus subdued, the suppurative process will be observed in like proportions to diminish.

Case.—A youth, when bathing, trod upon a broken bottle, which cut the sole of the foot deeply. I saw him about four months after the accident. There was considerable tumefaction and tenderness of the soft parts around the wound; almost the whole extent of the cut remained open, and there was a copious puriform discharge which appeared to ooze from a cavity corresponding in extent with the hardened and swollen soft parts. Four leeches were daily applied, and with a common poultice and perfect rest, in eight days the wound was closed; the repetition of the leeches a few times, at more distant intervals, completely removing all swelling and tenderness.

When a succession of abscesses has formed in any part, and when sinuses have been extending, as it were, step by step, the inflammation of the surrounding soft parts can be completely checked by local bleeding; and in this manner have I often been able, by the almost daily application of leeches, completely to conquer the inflammation, and thus check the formation of new abscesses and the extension of sinuses. I have long thought that it is by the bleeding from the incisions made for laying open sinuses that the

good effects of that practice are chiefly derived.

It is surprising to what an extent bleeding can be employed, or rather how often a small number of leeches can in such places be applied with the most decided benefit; and in place of patients being reduced by such a practice, the effect of the depletion, by alleviating disease, seldom fails to improve the patient's health.

In Sloughing Ulcers. — Whenever an ulcer, whether it be the consequence of a wound, or caused by some specific virus, such as that of syphilis, assumes a disposition to slough, it has been usual to employ stimulants, both as internal as well as external remedies. Now there are many cases of this description wherein an opposite or depletive system of treatment may be advantageously employed; and I first observed the extraordinary effect of depletion in a case of sloughing chancre, from which a profuse hemorrhage took place.

Case.—Early one morning I was sent for to visit a gentleman who had lost a great quantity of blood during the night from a sloughing chancre, which had extended into one of the corpora cavernosa. To arrest this hemorrhage I immediately bled him at the arm till he fainted; after which the hemorrhage from the sore did not return, but a change took place in its character, which I little anticipated. The sloughing process was completely checked, the slough separated, and the wound granulated and cicatrised in the most healthy manner.

Reflecting on the effect of depletion in such cases, we have an incontrovertible proof that sloughing sores are at least not always to be attributed to a diminished vigour or typhoid state of the system, or from any more virulent quality of the specific virus, but to an excess of inflammation arising from the peculiar state of the system or constitution of the patient, and this inflammatory state is to be subdued by an antiphlogistic system of treatment, independent of any subsequent treatment which may be necessary for the cure of the specific disease. Hence, as is well known, in cases where the syphilitic sore shows a disposition to inflame much, or to slough, the exhibition of mercury is prejudicial, and never ought to be administered until all local as well as constitutional excitement is subdued.

In the class of cases to which I allude, besides blood-letting, opium ought to be freely given, and one or more grains may be taken every few hours, until the symptoms are relieved. The same observations on the curative effects of blood-letting in sloughing syphilitic sores, apply to those wounds where it is not unusual to see the soft parts slough or mortify from the violence of the inflammation consequent to the injury. In such cases too there is a period when the best effects will result from local or general blood-letting, and that where from a sloughing appearance of the wound depletion is not commonly employed.

This useful effect of abstracting blood has been established in the most satisfactory manner in the treatment of *hospital gangrene* by Mr. Boggie, an intelligent army surgeon, who met with many examples of that formidable disease in military hospitals during the Spanish campaigns, and for which he found venesection the most powerful remedy.

In Ulcers of the Legs.—This plan of treatment is equally applicable to the inflamed integuments around an ulcer, and I am constantly in the habit of applying repeatedly a small number of leeches, and with the best effects, in the immediate vicinity of ulcerated surfaces, and where general bleeding is not indicated.

I may, however, here mention, that there are many ulcers of the lower limbs, which though not accompanied by those febrile symptoms which point out the propriety of general blood-letting, are manifestly benefited by the abstraction of a moderate quantity of blood by venesection. I was first led to adopt this practice by having remarked a decided benefit in some ulcers from the rupture of a varicose vein accompanying them, and from the benefit derived by bleeding animals afflicted with any ulceration, or humour, as it is commonly designated. And also from such ulcers being usually the effect of some constitutional disturbance, which would have been relieved by venesection.

By adopting the practice of bleeding patients with ulcerated legs, whenever they were admitted into the hospital, and pursuing an antiphlogistic regimen, and with no other local treatment than a cold-water poultice, with the horizontal posture, I have been much surprised with the rapidity of their amendment, compared with the tedious and troublesome application of plasters and bandages.

In Wounds.—The abstraction of a quantity of blood is, I have already mentioned, to be had recourse to, before and after most surgical operations; and when operations prove unsuccessful, I have also stated, in by far the majority of cases, the patients die of inflammation of some internal organ. Bleeding therefore will, when early resorted to, and carried to a proper extent, have the effect of always

checking any inflammatory disposition, and it will also be the means of securing the healing of the wound by adhesion, when such is desirable. The modes of abstracting blood for such purposes are, either to take away a quantity before the operation,—to allow the divided vessels to bleed during the operation—or to employ venesection after the operation. Now all these *three* methods ought to be employed separately or conjointly in particular cases.

When an operation is to be performed on a plethoric subject, and an operation where little blood can be lost, more particularly in operations for *cataract*, when no bloodvessel is ever divided, then it is very judicious to bleed the patient on the morning of the operation; any future bleeding, of course, depending on the subsequent symptoms.

When there is any chance of bloodvessels being divided during the operation of such a size as to admit of any wished-for quantity of blood to flow from the wound, then I have usually been in the habit of *not* bleeding the patient previous to the operation, but of allowing such a quantity to escape from the divided vessels as appeared expedient.

I have already dwelt on the advantages which are in most cases derived from a plentiful sanguineous depletion during operations, and of the complete check which this gives to the accession of the febrile symptoms, and to the danger of inflammation in the wounded parts; and so strongly am I impressed with the utility of this practice, I have generally remarked that all those patients who have lost much blood during operations from the wound, seldom require any subsequent bleeding, and the wounds usually heal by adhesion.

When under any circumstances, whether the patient may have lost blood previous to an operation or during it, febrile symptoms do supervene, attended by more or less *local* pain, then should blood be freely abstracted, and the bleeding repeated until such symptoms are completely subdued.

I formerly noticed, that if a wound be not forcibly closed and tightly bandaged, and vessels of any considerable size have not been tied with ligatures, then whenever the slightest inflammatory disposition supervenes, a hemorrhagic effort takes place, and a bleeding from the wound ensues, which discharge never fails to relieve the inflammatory state of the parts. From observing this phenomenon, I have been led not to dress wounds and close them up in the usual manner; and whenever any bleeding from them does take place, never to use any local means to suppress it, but to leave the vessels as it were unmolested, and to pour out such a quantity of blood as may be requisite to relieve the inflammatory state of the wounded parts. This system of management generally secures the closure of the greater portion of the wound by adhesion, when its edges are in contact, and when the wound is not of such a nature as to render it impossible. As I have already remarked, it so moderates the consequent local inflammation that the suppurative process is greatly diminished both in severity and in extent. The same general remarks apply to wounds accidentally inflicted, and all kinds of injuries; and some observations on these points I have in part anticipated.

Hitherto great attention has been directed to the useful and curative effects of blood-letting, but it is natural that you should inquire what are the consequences of such bleeding not being resorted to under all the various circumstances which I have pointed out, as indicating the propriety of such treatment. You will daily meet with opportunities of noticing the changes of structure which take place in every organ of the body, in consequence of inflammations being allowed to advance, —inflammations which, had they either been early detected and treated by depletion, might have, in all probability, been subdued, and thus any permanent change of structure of the inflamed part completely arrested.

There are, no doubt, many examples of inflammatory diseases, which have been completely relieved without blood-letting, some of them, when left to nature, running through a particular course, and leaving the affected organ unchanged; and there are others which are checked by the exhibition of those internal and other remedies which influence and subdue the action of the arterial system. But there are many affections where the propriety of blood-letting has been indicated, though not adopted; and where, in consequence, the foundation has been laid of some substantial structural disease. I am indeed convinced, that in almost all those diseases which are, at their commencement, attended by a disturbed action of the vascular system, a much more rapid and efficient abatement of the symptoms would result from venesection, pursued even to a very moderate extent, and the whole system suffer a much less subsequent debility, than by the free use of purgatives and diaphoretics, and a long continued perseverance in an antiphlogistic treatment.

Some anomalous Effects of Blood-letting.

There is a curious effect of bleeding which was first remarked to me, in the following instance, by Professor RUSSELL of Edinburgh, and I am not aware has been noticed.

Case.—A lady of a plethoric habit was very liable to sudden and severe congestions of blood in different parts of the body, most frequently in the lungs: the abstraction of a quantity of blood was indispensable. The moment a vein was opened she not only began to experience relief, but felt an instantaneous exhilaration of spirits, like one intoxicated. Mr. RUSSELL repeatedly witnessed this very singular effect in the patient, and a medical friend of his witnessed an effect somewhat similar in another person.

Bleeding, too, not only increases the action of the bowels, but it promotes the mercurial action. Dr. FORDYCE used to say that in some cases of constipated bowels, you ought to open them with a lancet; and the late Mr. GIBSON of Manchester was in the habit of bleeding largely when he was anxious to influence the system rapidly with mercury.

The remarkable effect of abstracting blood from domestic animals under different circumstances and for different purposes, is well worthy of remark. I have mentioned the exhilarating effects which some persons experience from the loss of blood, more particularly when the viscera of any of the great cavities, as the head, or the system in general, is in a state of congestion. Similar effects may be observed in horses who get into too high condition, as it is called, in which state a heaviness and want of activity supervene, which is relieved by blood-letting, and they acquire a fresh vigour.

An acute observer informed me that he has often found, that if a pointer is bled on the morning of the day previous to hunting, the fatigue he can endure is infinitely greater than another dog in the same condition who has not lost blood.

The practice of bleeding calves in order to render the muscles paler, is also another purpose for which blood may be abstracted.

It is not an unusual, though it is a very erroneous notion, that if a person repeatedly loses blood, it becomes *a habit*, and he requires ever afterwards to be occasionally bled. But surely if a patient is affected with an inflammatory disease, his sufferings should be alleviated by blood-letting, when it is perhaps the only certain remedy.

There is a practice with some people of losing blood *periodically*, and that generally in the spring and autumn, and it is by no means improbable that, if these periodical bleedings were in such persons neglected, some injurious consequences might follow.

Concluding Observations.

Having now concluded the observations I proposed to make on the subject of blood-letting, allow me to express a hope, that notwithstanding the great extent of the subject, I have not omitted the consideration of any very important point. I have made every effort in my power to arrange and methodize the various topics on blood-letting contained in these lectures, and have been collecting the materials of which they are composed for many years, embracing every opportunity of putting the different doctrines, which I have endeavoured to inculcate, to the test of experience in diseases of all organs and of all textures, and also of comparing my opinions with the experience and observations of others. There are many remarks on blood-letting, as applicable to the treatment of particular diseases, to be found in the writings of various authors; but nowhere has the subject been discussed in a general and comprehensive manner, so that I have not had the advantage of a reference to authorities to serve as a guide, or to assist me in arranging the great mass of materials which this extensive subject embraces. I have carefully avoided entering on the numerous and important discussions of theoretical and speculative doctrines, and I have only brought before you facts, and simple inductions drawn from them. Almost every observation on blood-letting which I have made is, I am convinced, in accordance with the experience of the generality of practical men. I allude to those who themselves perform the operations necessary for the abstraction of blood, for I contend, that it is perfectly impossible for such as do not use their own judgment in employing blood-letting, and in regulating its extent by the effects it produces whilst the blood is flowing from the vein, to form any correct notions, or have any enlarged views on this subject. He who is in the habit of prescribing the abstraction of particular quantities of blood, in like manner as he may be accustomed to write a prescription for a dose of medicine, must possess a very incompetent knowledge of all the advantages which are to be derived from this most powerful remedy.

THE LANCET.

London, Saturday, March 29, 1834.

Since the publication of the last Number of this Journal, the Parliamentary Committee has held four sittings—viz. on Friday of the last week, and on Monday, Tuesday, and Wednesday, of the present. The witnesses were called as follows:—

Friday.—Drs. Weatherfield—Warren—Wilson.

Monday.—Drs. Wilson—Elliotson—Billing.

Tuesday.—Drs. Clendinning—Burroughs—Sims.

Wednesday.—Drs. Arnott—Billing—and Sir A. Barry.

At the conclusion of the sitting on Wednesday, the Committee adjourned to *Monday, the 4th of April*, when Sir David Barry will be recalled at 12 o'clock precisely. We shall merely observe that the evidence of several of the witnesses was admirable, and that medical reformers already have ample reason to rejoice that the inquiry has been instituted.

In a country like England, where the people are enterprising, industrious, powerful, and wealthy, the important interests which are necessarily connected with the every-day transactions of life, are continually pushed forward with claims to legislatorial protection. Accordingly it happens, that, during a session of many months' duration, Parliament is actively engaged in the process of law-making, and bills press upon bills in such rapid succession, and the motions for "third readings" are so numerous, that Mr. Speaker is threatened with hoarseness by his repeated announcements that "the *ayes* have it."

If the business of manufacturing statutes were always committed to the care and discretion of sensible persons, we might not have reason to bewail the zeal with which it is conducted; but, unfortunately for the community, not only are second and third-rate journeymen admitted into the manufactory, but even masters and workmen of the first class often succeed in gaining admission to the workshop with testimonials of a very questionable character. On perusing some of the modern Acts of Parliament, we have often been reminded of an old squire of Devon, who, on having been asked what were his intentions relative to the future mental occupations of his third son, replied, that "as the young man had been with a barrister, and could not be made to *understand the law*, he should send him to Parliament, where he would find an innocent amusement in assisting to *make the law*, along with the first gentry of the country." The old gentleman may have been justified in inflicting this severe reproach on the character and capabilities of the parliaments of the boroughmongers, but we cannot believe that the signs of imbecility which were exhibited by his clod-hopping boy, would be less conspicuous in a reformed House of Commons than in any other society of English gentlemen. Judging from several of the discussions and votes of the present session, the members of the present House of Commons may look back with contempt on the labours of their predecessors. The atmosphere of St. Stephen's appears, however, to exert in one respect a noxious influence on the thoughts and habits of the present assembly. We refer to the eagerness with which parts of subjects are seized, in order to found on them so many patch-work bills of legislation for our individual and collective government.

As the acts and proceedings of former Parliaments have been so vehemently, and we think, justly, condemned, we expected that this Parliament would have

signalised itself by repealing a few wagon-loads of those statutes which have so deeply injured the community; or, at any rate, would have abstained from adding to the lumber until it had been clearly ascertained how much of the existing rubbish could be safely swept away. This expectation has not been realized. We have, in common with the reflecting portion of the public, to deplore that our statute-books are daily receiving unwieldy augmentations, and that thus the labour which was at first imposed on a reformed legislature is rendered of still greater amount by the misdirection of the forces which are placed at its command. Our laws, as a code, are neither sound in principle nor consistent or uniform in detail. In legislating for England, Ireland is forgotten; and in framing statutes for Scotland, the interests of the other portions of the monarchy are not deemed of sufficient importance to elicit a casual thought or remark. Is it extraordinary, therefore, that our laws should be so deeply obscured by crudities and contradictions, that they are productive of injuries rather than of benefits to the community? If, however, the *general mass* of our laws ought to be subjected to the benign process of simplification, those statutes which relate to medical practice and education demand in an especial manner a thorough correction under the sanction of a reformed and independent legislature. The charters and Acts of Parliament for regulating the medical colleges and companies, exhibit, in their conflicting principles and details, an extent and character of confusion which may be aptly designated as chaotic. Pressed by the threatening emergency of such an accumulation, the Members of the House of Commons have appointed a Committee of their body, to inquire into the present state of medical law and practice, and to report thereon to the House. The wisdom characteristic of this proceeding is acknowledged everywhere except in the dens of the corruptionists, and every clear-sighted, honest man in the profession looks forward to the *probable* consequences of the investigation with feelings of satisfaction and delight. The prospect is a cheering one for the profession, but it nevertheless exhibits in the distance a few clouds, in which it is feared will be found some of the elements of mischief. In a word, it must be confessed that although the rage for patch-work legislation has somewhat abated, even now a dozen bills are often introduced into the House of Commons, for attaining an object which could be far more effectually secured by the provisions of one vigorous, comprehensive, well-constructed measure. If our senators would but take the trouble to understand a few elementary principles, they would, we conceive, be far less eager to legislate, and would found their proceedings on the results of experience, rather than attempt to engraft practical theories on absurd hypotheses, thus rendering our laws one entire mass of contradictory schemes and incongruities. What is now passing the House of Commons in connexion with that one subject, the *practice of medicine*? There is a notice of a motion regarding new regulations for *lunatic asylums*! There is a *coroner's bill* which has been read a first time!! There are several notices of motions relating to the *parochial poor*!!! There is a committee sitting to inquire into the state of *medical law, practice, and abuses*!!!!

Here, then, we have a sample of those proceedings which are ever leading to confusion in the construction of our laws. Is it wise, is it prudent, of the House to pass what may be considered a final vote on any of these branches until the sittings of the Medical Committee are concluded, and the report founded on the evidence elicited before that Committe is placed in possession of the Members?

Although the coroner's office is strictly a medical institution, yet the Bill which has already been read a first time, contains no reference to the duties of a medical practitioner as connected with that court, nor to the remuneration which a medical practitioner is, upon every principle of equity, entitled to receive for his attendance as a witness at an inquest!

We shall not waste the time of our readers by using any argument to prove either that the Coroner cannot discharge his duty to the public unless he be acquainted with the science of medicine, or even to show that as the Coroner's Court is at present constituted, the inquisitions on the bodies of the dead are, in the absence of medical testimony, useless mockeries. It is our object rather to direct the attention of medical practitioners to the subjects now before the House of Commons, in order that they may once more use that influence which their high character enables them to exercise, and urge on all those Members of Parliament with whom they may chance to associate, the impolicy, nay the folly, of legislating on any branch or subject of medicine until the whole question of medical polity be brought fairly and fully under the consideration of the legislature. This is a matter of immense importance, and ought not to be neglected on slight grounds, by any medical reformer in the kingdom. The House of Commons will not re-assemble for the dispatch of business until *Monday the 14th of April*, so that there is sufficient time for exertion, and we are confident, from what we have already experienced of the conduct of medical practitioners, that this time will be most beneficially occupied in promoting the success of the great cause of national medical reform.

If the Coroner's Bill now before the House be passed into a law as it is at present framed, medical men, instead of deriving a right to *remuneration* for their attendance as witnesses at inquests, will be liable to fine and imprisonment for non-attendance. We have not heard that it is the intention of Mr. CRIPPS, the promoter of the Bill, to proceed with the measure during this session; but it is certain that a notice of motion for the "second reading" is already on the books of the House; therefore, it is the bounden duty of every medical practitioner to be alive to his true interests, and cause, if possible, the rejection of a measure which, if it be passed into a law, will add another to those numerous instances of injustice of which he is already the suffering victim.

THE *Academy of Medicine, Paris*, has been lately occupied with the question of *vaccination*, and the possibility of transmitting *variola* a second time to subjects who have already had the disease, or who have been vaccinated. It seems to be the opinion of the majority of the members that the vaccine matter has lost much of its original power as a preventive measure. M. SALMONDE has revaccinated several individuals, and they have all exhibited symptoms indicating that the vaccine matter produced its characteristic effects a second time. Another member repeated vaccination on four individuals, one of whom had small-pox before. Three of these individuals exhibited pustules equal to the number of pricks made by the lancet, and the man now carried on his arm a pustule, unequivocally that of modified small-pox. We are informed by our Parisian correspondent, that there are numerous examples of a similar nature at the *Hôpital des Enfans Malades*, where many of the patients have either been affected with small-pox a second time, or, what is much more common, have contracted the disease several years after having been vaccina-

ted. In some cases of this kind the result of the disease has been fatal; in several the pock was confluent; but in a vast majority the secondary disease has been of a mild and comparativcly insignificant nature.

In the report of the ROYAL JENNERIAN AND LONDON VACCINE INSTITUTION, just published, it is remarked that "the Board "has still to express their regret that "much prejudice against this boon yet "exists, and that in distant parts of Eng- "land even *medical* men perpetuate, by "all means in their power, the SMALL- "POX." If this statement be founded on accurate information, it is one of very serious importance; if it be not founded on correct testimony, it is a calumny on the character of the profession which we are certain it was not the intention of the Board of Directors to inflict. When country practitioners are examined before the Parliamentary Committee, we trust they will be closely questioned with respect to the confidence with which *vaccination* is adopted in their respective districts, and whether it be really true that "medical men" endeavour to perpetuate "the existence of small-pox," that direful scourge of the human race.

WHEN the CAMBRIDGE PETITION was presented to the House of Lords on Friday evening last, the LORD CHANCELLOR, in the course of the debate which ensued, delivered some pungent satirical remarks on the system of graduation at Cambridge relative to medical education. The following passage is an extract from the speech of Lord BROUGHAM, as it was published in the *Times* of Saturday.

"If a man wished to follow the medical profession, being desirous to devote his faculties and time to that most useful employment, painful to many individuals but useful beyond almost all other professions to the community at large, he might, if he belonged to the established church, be enabled to pursue the profession by going to the University of Oxford or Cambridge, by residing within his own country, and by obtaining his education there; not, however, his medical education, be it observed, because though the two Universities are the only two bodies having the power of granting medical degrees, they are also the only bodies which at once have the monopoly of the privilege, and of the incapacity, to teach. They at once claimed for themselves the exclusive power of making doctors, and at the same time loudly admitted, for they proclaimed their incapacity, that they could not teach medicine. They could only make doctors; they could not qualify them. They could make a man a master of arts by teaching him mathematics and the classics; but he must learn medicine elsewhere; and after qualifying himself by seven years' study in another part of the world, return to the bosom of his *alma mater* for the purpose of being created a doctor. But if the same individual happened to be a conscientious dissenter, he could not go to Oxford at all. He would, to be sure, be admitted at Cambridge, but even there he could not be able to obtain a mathematical or doctor's degree. For the purpose of obtaining a degree in medicine, he must quit his home, his family, and friends, to go to a foreign country. He must repair to Paris, to the Dutch Universities, as formerly used to be the case, or to the Scotch Universities, for in London a knowledge of the medical art was not to be acquired. It should be borne in mind that the law of Scotland was very different, in many respects, from the law of England, and he (the Lord Chancellor) knew of many parents who had been deterred, by that very circumstance alone, from sending their children to Scotland for the purpose of medical education. Still, however, the dissenter had no chance; he might go abroad and remain there for three or four years, at great expense, receiving instructions in medical science, and he might return again, and find himself just in the same situation, as far as concerned the means of obtaining a degree, as when he first left. Why was he subjected to this hardship? Simply because he conscientiously differed from the religious opinions of the majority of his fellow-subjects in this part of the country."

In attributing to Oxford and Cambridge a "monopoly of the *incapacity*" to teach medicine, Lord BROUGHAM was especially happy, and the smartness of the expression is not weakened by the fact, that the

statute law of the realm awards to those two universities alone, the privilege of conferring medical degrees in England. Lord BROUGHAM, however, has not made any distinction between the individual who, after only a short residence on the continent, or no residence at all, has obtained a foreign degree, and that individual who, after, possibly, a ten-year's study in England, has not been enabled, through certain religious disabilities, to graduate at Oxford or Cambridge. With regard to the latter individual, he may command the most extensive acquirements in his profession, and yet be, in the eye of the law, disqualified from practising physic, while with respect to the first-named party, his foreign degree is rendered a passport to practice by throwing open to him the doors of the College of Physicians. From what has already transpired, the system of degree-manufacturing, like that of certificate-mongering in our hospitals and schools in London, seems to be rapidly proceeding towards its termination. Degrees should be honorary merely, and ought not to confer any legal privilege whatsoever, when those testimonials are awarded by the professors from whom the candidate received his instruction. Adopt a practice the converse of this, and the public are divested of every guarantee that the graduate is entitled to the university or collegiate distinction which he enjoys. If there be endowed public schools of medicine, where the professors have no private interests to interfere with them in the discharge of their public duties, it is possible that the Legislature might be warranted in prescribing the course of education which a student should follow, and the field of research he should prove himself capable of traversing, before he should be admitted to an examination for the degree of M.D. But even in that case, inasmuch as his teachers and examiners would be one body, the possession of that degree should not confer on the party the right of undertaking the responsible duties of a medical practitioner. In all other cases —in all other instances—when a man has to purchase his knowledge, or the means of becoming acquainted with his profession, he should be allowed to select his school without control, and be left to pursue that path of inquiry which should be prescribed to him in the valuable admonitions of his teacher. In one word, medical *education* should be free, but the *practice* of medicine should be regulated by well-defined, intelligible, and strict laws.

The reporter of the *Times* must have committed a very gross error in attributing to Lord BROUGHAM the expression, that "a knowledge of the medical art was not to be acquired in LONDON," as such a declaration it will be instantly seen involves a distinct contradiction of the pithy remark, that Oxford and Cambridge have "a monopoly of the privilege, and of the incapacity, to teach."

The system of medical education in London has undergone during the last ten years several most important changes, and almost every alteration has been preceded and followed by steps of improvement. In a word, we feel confident that Lord BROUGHAM is perfectly cognizant of the fact that London at this period, as a school of medicine, is not surpassed by any school in Europe. It does not appear, from the language which the CHANCELLOR employed with reference to medical abuses, that the feelings of Lord BROUGHAM suffered any deterioration when they were subjected to the crafty process of courtly booing and whispering at the evening meetings of the College of Physicians. How the eel-backed Baronet will console himself under his numerous and increasing afflictions we know not; but this we know, that hitherto his Tory schemes have not "worked well" with

the minds of a Whig ministry. The cause of medical reform is too cumbrous for the delicate digits of the courtly president of King HARRY's College.

THE EXAMINERS of the College of Surgeons are still proceeding in their reckless course, eight, out of fifteen candidates for the diploma, having been rejected at the last two meetings of the Court. And are the rulers of the College such dolts as to believe that they can establish a character for honesty with the profession, by thus wreaking their vengeance on unoffending students? That we do not object to efficient practical examinations, is sufficiently well known. What we object to is, a partiality towards candidates from particular schools, and conducting a scrutiny relating to a great public object, in the private closet of a monopolizing institution. How many more students are there ready to expose themselves to insult and rejection? We trust but few. The last draught from the ranks of the weak and unsuspecting must, we should imagine, be already effected.

HAVING, in the last LANCET, called on Mr. CÆSAR HAWKINS to publish his own account of an operation which was lately performed by him at St. George's Hospital, we now call on Mr. MAYO to publish his own description of at least two operations which he has performed at the Middlesex Hospital, during the present session. Mr. MAYO is aware of the cases to which we refer. If we are not misinformed, it is also in the power of Mr. ARNOTT to furnish the profession with a very useful report of an operation, during the performance of which he was not an idle spectator. The officers of our hospitals allege, for it is only an allegation, that they have suffered injury in character and reputation, by the publication of *false* reports. What, we inquire, would be the condition of many of them, if *correct reports* of their cases were *always* published?

AT a general Court of Governors of the LONDON HOSPITAL held on the 6th inst., to receive the report of the special committee chosen to inquire into the state of the official appointments of the Hospital, the Committee reported, "that they had heard with unqualified regret, that any expressions should be employed which reflected on the reputation of the medical officers of the institution;" and added, "that in the course of their investigations they had found no one circumstance to detract from the high character of those gentlemen for humanity, ability, and a strict attention to the duties they had undertaken to discharge."

APROPOS of the investigation now prosecuting before the Medical Committee of the Commons, a trial will soon take place on an indictment preferred by the WORSHIPFUL COMPANY OF APOTHECARIES against one of their Licentiates. A report of this trial must be dedicated to MOMUS, for assuredly it will excite more mirth than any medical event since the birth of HIPPOCRATES. It will prove a rare treat for the profession!

THE sixth, which makes the last, of Mr. WARDROP's excellent lectures on *Blood-letting*, is published in THE LANCET of this day. This important subject exhibits, as treated by Mr. WARDROP, many practical views which claim the attention of all the junior members of the profession. In the next lecture, Mr. WARDROP will proceed to the consideration of the diseases of the heart and

arteries. The researches of this eminent surgeon on the subject of *Aneurysm*, and the operations performed by him for the cure of that disease, will confer an interest on his discourses relative to affections of the bloodvessels, which the lectures could not derive from the recorded experience of any other practitioner.

WESTMINSTER MEDICAL SOCIETY.

Saturday, March 15th, 1834.

Dr. COPLAND in the Chair.

In the half hour devoted to miscellaneous communications, Mr. COSTELLO read a note which he had received from Dr. VEITCH on the subject of the small silk ligature, accompanied by a pamphlet which fully justified, in Mr. C.'s opinion, the claim of Dr. VEITCH to that improvement. He added, that he the more cheerfully rendered justice to Dr. VEITCH on this point, as, too frequently, contributors to science obtained no other reward than the approbation of their professional brethren. While on this subject, he would mention that he had received, since his communication to the Society, additional facts in proof of the value of *torsion*. Mr. C. then mentioned some of these cases, and alluded to the sufferings which Lord NELSON endured from a ligature which remained thirteen weeks in the wound, his life during the whole time having been placed in great peril, from which, literally, as well as figuratively, the destinies of this great man, nay the very glories of Trafalgar, hung on a thread.

LITHOTRITY AT NORTHAMPTON.

To the Editor of THE LANCET.

SIR,—I have looked in vain in your highly valuable Journal for some account of the cases of stone which were operated on in our Infirmary last autumn. I, for one, feel personal interest in the propagation of lithotrity, and therefore look up to you for assistance in so laudable an object. Mr. Costello is again here, and has operated this morning on a child of seven or eight years of age. There was on a former occasion some difficulty about this little fellow; but a smaller instrument having been made, Mr. Costello, assisted by Mr. Percival, was enabled to break down the stone with the utmost facility and security.

You have already done much for the practice of lithotrity, and I earnestly hope that you will continue to illustrate its vast advantages over the cruel system of *lithotomy*, until the dangerous operation of "cutting for stone" shall be no longer sanctioned by a single English surgeon.

I am, Sir, your well-wisher,

SENEX.

Northampton, March 24, 1834.

CORRESPONDENTS.

We have to acknowledge communications from Causticus—Dr. Anning—Dr. Vigne—A Member of the Royal College of Surgeons in London—Q. of King and Queen's Coll. of Physicians, Dublin—Dr. Marshall Hall—Mr. Carden, barrister—Mr. Carden, surgeon—Mr. W. Fergusson—Dr. Epps—A Pupil of the Webb Street School—A Student of St. George's Hospital—Mr. J. M. Coley—Mr. Yeatman. Of these Communications we shall endeavour to insert in the next LANCET those of Dr. Marshall Hall, Mr. W. Fergusson, Mr. Coley, and a Member of the Royal Coll. London. Also those of A Surgeon and A Governor, &c.

S. F. T.—Sir Astley Cooper or Mr. Wardrop.

A Surgeon and a Constant Reader.—It is legal to take such an assignment, but the body cannot be received without giving notice to the Inspector, Dr. J. Somerville.

A Pupil of Grainger's School.—The doctor in question is a quack, and unworthy of notice. These advertising pretenders will find themselves in an altered position under an improved system of medical law.

It is stated in a note from *Medicus* that a petition was signed last year, praying Parliament to establish *concours* in the medical elections of this country. Our correspondent wishes to learn from the gentleman who was intrusted with the petition, what has become of the document. For ourselves we must express a hope that no such petition will be presented to the Legislature at present. An Act of Parliament to regulate medical practice on just principles, would leave this question to be determined by the whole profession. If medical men are unfit to regulate the *medical* government of charitable institutions, they certainly are not qualified to advise the Legislature on such a subject.

A General P.—Lord Durham entertains the most liberal views with respect to general practitioners, and is the last peer in the House who would offer that body an insult. The observations of his Lordship, quoted by our correspondent, had reference to the state of medical practice before 1701, but that date was omitted in several of the papers.